**(21) 40 CFR 63.2402**
**(22) 40 CFR 63.2406**
**(23) Table 1**
**(24) Table 2**
**(25) Table 4**
**(26) Table 5**
**(27) Table 6**
**(28) Table 7**
**(29) Table 8**
**(30) Table 10**
**(31) Table 11**
**(32) Table 12**
.....

**Change 7:** The requirements of 40 CFR 63, Subpart FFFF are being added to the permit.

**SECTION E.6 EMISSIONS UNIT OPERATION CONDITIONS**

**Emissions Unit Description:**

**(e) One (1) Distillation Unit, constructed in 2004, with a maximum throughput rate of 1.0 tons of liquid waste per hour, controlled by a carbon adsorption system (C19), and exhausting to stack SDS 05.**

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.**

**(i) One (1) Pot Still, constructed in 2007 and modified in 2015, with a maximum throughput rate of 70 gallons of liquid waste per hour, controlled by a carbon adsorption system (C33), and exhausting to stack SDS 10.**

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.**

**(j) One (1) Thin Film Evaporator, constructed in 2008, with a 2.4 million Btu/hr natural gas fired burner and a maximum throughput rate of 390 gallons of liquid waste per hour, controlled by a carbon adsorption system (C34), and exhausting to stack S11.**

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.**

**(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)**

**National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements [326 IAC 2-7-5(1)]**

.

**E.6.1 General Provisions Relating to National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR 63, Subpart A] [326 IAC 20-1]**

**Pursuant to 40 CFR 63, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference in 326 IAC 20-1, for the above listed emissions units, except when otherwise specified in 40 CFR 63, Subpart FFFF.**

**E.6.2 Miscellaneous Organic Chemical Manufacturing NESHAP [40 CFR 63, Subpart FFFF] [326 IAC 20-84]**

**The Permittee shall comply with the following provisions of 40 CFR 63 Subpart FFFF (included as Attachment F to this permit), which are incorporated by reference as 326 IAC 20-84 for the Pot Still, Thin Film Evaporator and Distillation Unit:**

**(1) 40 CFR 63.2430**
**(2) 40 CFR 63.2435(a),(b),(d) and (e)**
**(3) 40 CFR 63.2440**
**(4) 40 CFR 63.2445(a)(2),(c),(d) and (f)**
**(5) 40 CFR 63.2450(a),(b),(c),(e),(g),(h),(l),(m) and (p)**
**(6) 40 CFR 63.2455(a) and (b)**
**(7) 40 CFR 63.2465**
**(8) 40 CFR 63.2470**
**(9) 40 CFR 63.2475**
**(10) 40 CFR 63.2480(a) and (b)**
**(11) 40 CFR 63.2505**
**(12) 40 CFR 63.2515**
**(13) 40 CFR 63.2520**
**(14) 40 CFR 63.2525(a)-(f)**
**(15) 40 CFR 63.2540**
**(16) 40 CFR 63.2545**
**(17) 40 CFR 63.2550**
**(18) Table 1**
**(19) Table 3**
**(20) Table 4**
**(21) Table 5**
**(22) Table 6**
**(23) Table 8**
**(24) Table 9**
**(25) Table 11**
**(26) Table 12**

.....

**Change 8:** The existing ATDU includes a natural gas fired heater. This heater is a 15.6 MMBtu/hr unit instead of 10 MMBtu/hr, as listed in the permit.

A.2 Emission Units and Pollution Control Equipment Summary
[326 IAC 2-7-4(c)(3)][326 IAC 2-7-5(14)]

This stationary source consists of the following emission units and pollution control devices:

.....

(d) One (1) Solids Distillation System (SDS), constructed in 2004, with a maximum throughput rate of 4 tons of waste per hour, consisting of:

.....

(3) One (1) Anaerobic Thermal Desorption Unit, identified as ATDU, with one (1) ~~10~~**15.6** MMBtu/hr natural gas fired heater, exhausting to stack SDS 02.

.....

SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

.....

(d) One (1) Solids Distillation System (SDS), constructed in 2004, with a maximum throughput rate of 4 tons of waste per hour, consisting of:

.....

(3) One (1) Anaerobic Thermal Desorption Unit, identified as ATDU, with one (1) ~~10~~**15.6** MMBtu/hr natural gas fired heater, exhausting to stack SDS 02.

.....

.....

SECTION E.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

.....

(d) One (1) Solids Distillation System (SDS), constructed in 2004, with a maximum throughput rate of 4 tons of waste per hour, consisting of:

.....

(3) One (1) Anaerobic Thermal Desorption Unit, identified as ATDU, with one (1) ~~10~~**15.6** MMBtu/hr natural gas fired heater, exhausting to stack SDS 02.

.....

.....

**Change 9:** For the emission calculations, the existing ATDU previously showed a VOC PTE of 14.8 ton/yr. This value is incorrect; the only emissions for this unit are from combustion.

**Change 10:** Control device ID's have been added to the permit. Also, applicable NSPS/NESHAPs have been included in the description for each emission unit.

A.2 Emission Units and Pollution Control Equipment Summary
[326 IAC 2-7-4(c)(3)][326 IAC 2-7-5(14)]

This stationary source consists of the following emission units and pollution control devices:

(a) Hazardous waste material (HWM) tank storage, identified as Unit 1, described as follows:

(1) HWM mix, blend, and storage tanks, identified as 1R, 4, 18, 19, 20, 21, 22, and 23, with nominal gallon capacities of 12,600, 12,690, 20,353, 20,353, 19,688, 20,353, 20,353, and 20,353, respectively, constructed in 2008, 1970, 1993, 1993, 1993, 1993, 1993, and 1993, respectively, collectively using three (3) sets of carbon adsorbers with the sets used alternately, each set with two (2) carbon canisters in series for VOC control **(C1-C6)**, using a closed-loop vapor exchange system to minimize air emissions, and exhausting to one stack, identified as HWM Storage/Blending Stack.

(2) HWF receiving, blending and storage tank, identified as 29, with a capacity of 21,000 gallons, constructed in 2000, using one (1) carbon adsorber unit consisting of two (2) carbon canisters in series for VOC control **(C7-C8)**, using a closed-loop vapor exchange system to minimize air emissions, and exhausting to stack TK 29.

(3) HWF blending and mixing tanks, identified as 6 and 7, with gallon capacities of 4,386 and 2,900, respectively, constructed in 1989 and 1952, respectively,

collectively using a flare **(FL2)** as primary VOC control and carbon canisters as backup VOC control **(C9)**.

(4) One (1) hydropulper tank, identified as Tank 24 HP, constructed in 1993, with a capacity of 3,500 gallons using one (1) carbon adsorber unit consisting of two (2) carbon canisters **(C10-C11)** and one (1) feed hopper using a separate carbon control system **(C12)**.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart DD, this unit is considered an affected facility.**

(b) Hazardous waste fuel (HWF), hazardous waste for tolling and organic liquid product receiving and shipping operations located at Area 2, Area 8 and the Rail line, including organic product receiving/shipping, identified as Unit 2R, with a maximum capacity of 17,200 gallons of liquid material per hour, and Unit 2S, with a maximum capacity of 13,200 gallons of liquid material per hour, constructed in 1991, and consisting of the following operations:

(1) Loading and unloading of railcars, occurring outdoors and unenclosed, and using submerged filling;

(2) Loading and unloading of tank trucks, occurring semi-enclosed in a three-sided shed, and at separate unenclosed areas, and using bottom filling; and

(3) Unloading of various sizes of drums and totes.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF, 40 CFR 63, Subpart DD and 40 CFR 63, Subpart EEEE, this unit is considered an affected facility.**

(c) One (1) materials manual lab packing, depacking, and bulking operation, identified as Unit 4, with a maximum capacity of 27,375 pack containers per year, constructed in 1992, including three insignificant booths located in Area 5 in addition to the following equipment:

(1) One (1) booth for manual lab packing, depacking and bulking of organic materials, identified as Lab Pack Booth 1, using a single carbon canister for VOC control **(C13)**, and exhausting to stack LP S1.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.**

(d) One (1) Solids Distillation System (SDS), constructed in 2004, with a maximum throughput rate of 4 tons of waste per hour, consisting of:

(1) One (1) SDS Shredder, approved for modification in 2013, using a variable speed fan and carbon adsorption system **(C14)** for VOC control, exhausting to stacks SDS 01(a) and (b).

(2) One (1) Anaerobic Thermal Desorption System enclosed feed conveyor under nitrogen blanketing, and enclosed in a chilled jacket, using a carbon adsorption system for VOC control **(C15)**, exhausting to SDS 03.

(3) One (1) Anaerobic Thermal Desorption Unit, identified as ATDU, with one (1) 15.6 MMBtu/hr natural gas fired heater, exhausting to stack SDS 02.

**Under 40 CFR 63, Subpart DDDDD, the ATDU is considered an affected facility.**

(4) One (1) Oil-Water Separator, using a carbon adsorption system for VOC control **(C16)**, exhausting to stack SDS 03.

(5) One (1) water tank, using a carbon adsorption system for VOC control **(C17)**, exhausting to stack SDS 08.

(6) One (1) Vapor Recovery Unit (VRU), using an enclosed John Zink flare **(FL1)** with a demister (and a carbon adsorption system as backup **(C18)**) for VOC control, exhausting to stack SDS 07.

(7) One (1) solids shaker and conveyor system, using two (2) baghouses for particulate control **(BH1-BH2)**, exhausting to stacks SDS 04 and SDS 09.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.**

(e) One (1) Distillation Unit, constructed in 2004, with a maximum throughput rate of 1.0 tons of liquid waste per hour, controlled by a carbon adsorption system **(C19)**, and exhausting to stack SDS 05.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.**

(f) One (1) condensed liquid tank, identified as Tank 55, constructed in 2004, with a nominal capacity of 20,000 gallons, used to collect oil from the oil-water separator, controlled by a carbon Adsorption system **(C20)**, and exhausting to stack SDS 08.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.**

(g) Three (3) RCRA hazardous waste tanks, identified as Tanks 52 through 54, constructed in 2004, each with a nominal capacity of 12,000 gallons, controlled by a carbon adsorption system **(C21)**, and exhausting to stack SDS 08.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.**

(h) Five (5) product tanks, identified as Tanks 57 through 61, constructed in 1998, with nominal capacities of 20,000 gallons, 20,000 gallons, 6,000 gallons, 6,000 gallons and 20,000 gallons, respectively, each controlled by a carbon adsorption system containing two (2) carbon canisters **(C22-C32)**, and exhausting to stacks LDS 09a-09e.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart EEEE, this unit is considered an affected facility.**

(i) One (1) Pot Still, constructed in 2007 **and modified in 2015**, with a maximum throughput rate of ~~70~~ **115** gallons of liquid waste per hour, controlled by a carbon adsorption system **(C33)**, and exhausting to stack SDS 10.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.**

(j) One (1) Thin Film Evaporator, constructed in 2008, with a 2.4 million Btu/hr natural gas fired burner and a maximum throughput rate of 390 gallons of liquid waste per hour, controlled by a carbon adsorption system **(C34)**, and exhausting to stack S11.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.**

(k) Six (6) product tanks located in Area 1, identified as Tanks 62 through 67, permitted in 2008 with nominal capacities of 12,000 gallons per tank, controlled by a carbon adsorption system **(C35)**, and exhausted to stacks S12-S17, respectively. Also included is a molecular sieve, installed in 2010.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.**

(l) One (1) degassing operation, constructed in 2008 and approved in 2014 for modification, with a maximum degassing rate of 405.8 tons of gasses per year. The degassing operation includes a reactor tank into which gasses are vented and a pressurized "shock" tank that will condense gasses into liquids for collection and offsite shipment, with remaining gasses controlled by a flare **(FL3)** or carbon canisters **(C36)**.

**Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.**

…….

*These changes were also made to emission unit descriptions in Sections D.1 and E.1.*

**Change 11:** The emissions calculations list a 2.5 MMBtu/hr hot oil heater; however this unit is not listed in the permit. This heater is added to the Insignificant Activities section of the permit.

A.3 Specifically Regulated Insignificant Activities
[326 IAC 2-7-1(21)][326 IAC 2-7-4(c)][326 IAC 2-7-5(14)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

……

**(d) One (1) hot oil heater, capacity of 2.5 MMBtu/hr.**

……

**Change 12:** A diesel-fired emergency generator has been added to the permit as follows:

A.2 Emission Units and Pollution Control Equipment Summary
[326 IAC 2-7-4(c)(3)][326 IAC 2-7-5(14)]

This stationary source consists of the following emission units and pollution control devices:

……

**(n) One (1) diesel-fired emergency generator, approved in 2015 for construction, with a maximum capacity of 896 horsepower, exhausting to stack G.**

**Under 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ, this unit is considered an affected facility.**

……

**SECTION E.8 FACILITY OPERATION CONDITIONS**

**Facility Description:**

**(n) One (1) diesel-fired emergency generator, approved in 2015 for construction, with a maximum capacity of 896 horsepower, exhausting to stack G.**

**Under 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ, this unit is considered an affected facility.**

**(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)**

**New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]**

**E.8.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]**

**Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1, for the above listed emission unit, except as otherwise specified in 40 CFR Part 60, Subpart IIII.**

**E.8.2 Stationary Compression Ignition Internal Combustion Engines NSPS [326 IAC 12] [40 CFR Part 60, Subpart IIII]**

**The Permittee shall comply with the provisions of 40 CFR Part 60, Subpart IIII, (included as Attachment I to this permit) which are incorporated by reference as 326 IAC 12, for the above listed emission unit:**

**(1) 40 CFR 60.4200(a)(2)**
**(2) 40 CFR 60.4205(b)**
**(3) 40 CFR 60.4206**
**(4) 40 CFR 60.4207(b)**
**(5) 40 CFR 60.4209(a)**
**(6) 40 CFR 60.4211(a), (c) & (f)**
**(7) 40 CFR 60.4214(b)**
**(8) 40 CFR 60.4218**
**(9) 40 CFR 60.4219**
**(10) Table 8**

**SECTION E.9 FACILITY OPERATION CONDITIONS**

Facility Description:

(n) One (1) diesel-fired emergency generator, approved in 2015 for construction, with a maximum capacity of 896 horsepower, exhausting to stack G.

Under 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ, this unit is considered an affected facility.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

**National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements [326 IAC 2-7-5(1)]**

**E.9.1 Stationary Reciprocating Internal Combustion Engines NESHAP [40 CFR Part 63, Subpart ZZZZ] [326 IAC 20-82]**

**The Permittee shall comply with the following provisions of 40 CFR Part 63, Subpart ZZZZ, which are incorporated by reference as 326 IAC 20-82, (included as Attachment J of this permit) for the above listed emission unit:**

**(1) 40 CFR 63.6580**
**(2) 40 CFR 63.6585**
**(3) 40 CFR 63.6590(b)(1)(i)**
**(4) 40 CFR 63.6605(b)**
**(5) 40 CFR 63.6640(f)**
**(6) 40 CFR 63.6645(f)**
**(7) 40 CFR 63.6665**
**(8) 40 CFR 63.6670**
**(9) 40 CFR 63.6675**

……

**Change 12:** Tradebe wishes to increase the capacity of the existing Pot Still from 70 gallons per hour to 115 gallons per hour. PTE calculations (TSD App. A) have been updated to show the revised capacity.

A.2 Emission Units and Pollution Control Equipment Summary
[326 IAC 2-7-4(c)(3)][326 IAC 2-7-5(14)]

This stationary source consists of the following emission units and pollution control devices:

……

(i) One (1) Pot Still, constructed in 2007 **and modified in 2015**, with a maximum throughput rate of ~~70~~**115** gallons of liquid waste per hour, controlled by a carbon adsorption system (C33), and exhausting to stack SDS 10.

……

*Note: This change was also made in D.1, E.1, E.2 and E.6.*

**Conclusion and Recommendation**

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. 089-34432-00345 and Significant Permit Modification No. 089-34503-00345. The staff recommend to the Commissioner that this Part 70 Significant Source Modification and Significant Permit Modification be approved.

**IDEM Contact**

(a) Questions regarding this proposed permit can be directed to Heath Hartley at the Indiana Department Environmental Management, Office of Air Quality, Permits Branch, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) 232-8217 or toll free at 1-800-451-6027 extension 2-8217.

(b) A copy of the findings is available on the Internet at: http://www.in.gov/ai/appfiles/idem-caats/

(c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

**Appendix A: Emissions Calculations**
**Emissions Summary Sheet**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Before 2015 Modification**

| Uncontrolled PTE (TPY) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Emission Unit** | **PM** | **$PM_{10}$** | **$PM_{2.5}$** | **$SO_2$** | **NOx** | **VOC** | **CO** | **CO2e** | **Total HAPs** | **Highest Single HAP** | |
| HWM Storage | 0 | 0 | 0 | 0 | 0 | 8.9 | 0 | 0 | 8.9 | 8.9 | Toluene |
| HWF Ship | 0 | 0 | 0 | 0 | 0 | 59.3 | 0 | 0 | 59.3 | 59.3 | Toluene |
| Unit 24 | 0 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 2.2 | 2.2 | Toluene |
| Lab Pack | 0.6 | 0.6 | 0.6 | 0 | 0 | 2.5 | 0 | 0 | 2.5 | 2.5 | Toluene |
| Degassing | 0 | 0 | 0 | 0 | 0 | 17.0 | 0 | 0 | 0.3 | 0.3 | Toluene |
| SDS Shredder | 0 | 0 | 0 | 0 | 0 | 2.6 | 0 | 0 | 2.6 | 2.6 | Toluene |
| SDS Shaker and conveyor | 77.7 | 77.7 | 77.7 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0 | |
| SDS-ATDU | 0 | 0 | 0 | 0 | 0 | 14.8 | 0 | 0 | 14.8 | 14.8 | Toluene |
| SDS-ATDU from NG | 0.1 | 0.5 | 0.5 | 0.04 | 6.8 | 0.4 | 5.7 | 8,248 | 0.1 | 0.1 | Hexane |
| Distillation | 0 | 0 | 0 | 0 | 0 | 2.3 | 0 | 0 | 2.3 | 2.3 | HCl |
| Tanks 52-55 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0.5 | 0.5 | Toluene |
| Tanks 57-67 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0 | 0 | 1.9 | 1.9 | Toluene |
| Pot Still | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0.5 | 0.5 | Toluene |
| Thin Film Evap | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,269 | 0.02 | 0.02 | Toluene |
| Heater | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,322 | 0.02 | 0.02 | Toluene |
| Fugitive | 1.9 | 0.4 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Source Total** | **80.4** | **79.4** | **79.4** | **0.05** | **9.0** | **113.0** | **7.5** | **10,839** | **95.9** | **93.0** | **Toluene** |

| Limited PTE (TPY) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Emission Unit** | **PM** | **$PM_{10}$** | **$PM_{2.5}$** | **$SO_2$** | **NOx** | **VOC** | **CO** | **CO2e** | **Total HAPs** | **Highest Single HAP** | |
| HWM Storage | 0 | 0 | 0 | 0 | 0 | 8.9 | 0 | 0 | 8.9 | 8.9 | Toluene |
| HWF Ship | 0 | 0 | 0 | 0 | 0 | 59.3 | 0 | 0 | 59.3 | 59.3 | Toluene |
| Unit 24 | 0 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 2.2 | 2.2 | Toluene |
| Lab Pack | 0.6 | 0.6 | 0.6 | 0 | 0 | 2.5 | 0 | 0 | 2.5 | 2.5 | Toluene |
| Degassing | 0 | 0 | 0 | 0 | 0 | 17.0 | 0 | 0 | 0.3 | 0.3 | Toluene |
| SDS Shredder | 0 | 0 | 0 | 0 | 0 | 0.12 | 0 | 0 | 2.6 | 2.6 | Toluene |
| SDS Shaker and conveyor | 77.7 | 77.7 | 77.7 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | |
| SDS-ATDU | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 14.8 | 14.8 | Toluene |
| SDS-ATDU from NG | 0.1 | 0.5 | 0.5 | 0.04 | 6.8 | | 5.7 | 8,248 | 0.1 | 0.1 | Hexane |
| Distillation | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0 | 2.3 | 2.3 | HCl |
| Tanks 52-55 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0.5 | 0.5 | Toluene |
| Tanks 57-67 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0 | 0 | 1.9 | 1.9 | Toluene |
| Pot Still | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0.5 | 0.5 | Toluene |
| Thin Film Evap | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,269 | 0.02 | 0.02 | Toluene |
| Heater | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,322 | 0.02 | 0.02 | Toluene |
| Fugitive | 1.9 | 0.4 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Source Total** | **80.4** | **79.4** | **79.4** | **0.05** | **9.0** | **93.8** | **7.5** | **10,839** | **95.9** | **93.0** | **Toluene** |

**Appendix A: Emissions Calculations**
**Emissions Summary Sheet**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**After 2015 Modification**

| Uncontrolled PTE (TPY) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Emission Unit** | **PM** | **$PM_{10}$** | **$PM_{2.5}$** | **$SO_2$** | **NOx** | **VOC** | **CO** | **CO2e** | **Total HAPs** | **Highest Single HAP** | |
| HWM Storage | 0 | 0 | 0 | 0 | 0 | 8.9 | 0 | 0 | 8.9 | 8.9 | Toluene |
| Unit 2R | 0 | 0 | 0 | 0 | 0 | 77.3 | 0 | 0 | 77.3 | 77.3 | Toluene |
| Unit 2S | 0 | 0 | 0 | 0 | 0 | 59.3 | 0 | 0 | 59.3 | 59.3 | Toluene |
| Unit 24 | 0 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 2.2 | 2.2 | Toluene |
| Lab Pack | 0.6 | 0.6 | 0.6 | 0 | 0 | 2.5 | 0 | 0 | 2.5 | 2.5 | Toluene |
| Degassing | 0 | 0 | 0 | 0 | 0 | 17.0 | 0 | 0 | 0.3 | 0.3 | Toluene |
| SDS Shredder | 0 | 0 | 0 | 0 | 0 | 2.6 | 0 | 0 | 2.6 | 2.6 | Toluene |
| SDS Shaker and conveyor | 77.7 | 77.7 | 77.7 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0 | |
| SDS-ATDU from NG | 0.1 | 0.5 | 0.5 | 0.04 | 6.8 | 0.4 | 5.7 | 8,248 | 0.13 | 0.12 | Toluene |
| SDS-VRU | 0 | 0 | 0 | 0 | 0 | 2,328 | 809.2 | 14,706 | 904.3 | 904.3 | Hexane |
| Flare FL1 (from VRU) | 0 | 0 | 0 | 8 | 5 | 10.8 | 28.5 | 1,505 | 13.4 | 12.6 | HCl |
| Distillation | 0 | 0 | 0 | 0 | 0 | 2.3 | 0 | 0 | 2.3 | 2.3 | Toluene |
| Tanks 52-55 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0.5 | 0.5 | Toluene |
| Tanks 57-67 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0 | 0 | 1.9 | 1.9 | Toluene |
| Pot Still (modified in 2015)* | | | | | | | | | | | |
| Thin Film Evap | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,269 | 0.02 | 0.02 | Toluene |
| Heater | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,322 | 0.02 | 0.02 | Toluene |
| Fugitive | 1.9 | 0.4 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Existing Total** | **80.4** | **79.4** | **79.4** | **8.1** | **14.2** | **2,514** | **845.2** | **27,050** | **1,075.7** | **904.3** | **Hexane** |
| **2003 Modification Total** | **77.8** | **78.2** | **78.2** | **8.1** | **12.1** | **2,345** | **843.4** | **24,459** | **923.3** | **904.3** | **Hexane** |
| *2015 Modification* | | | | | | | | | | | |
| SDS Shredder II | 0 | 0 | 0 | 0 | 0 | 7.1 | 0 | 0 | 7.1 | 7.08 | Tetrachloroethylene |
| SDS-ATDU II | 0.3 | 1.0 | 1.0 | 0.1 | 13.7 | 0.8 | 11.5 | 16,587 | 0.3 | 0.25 | Hexane |
| SDS VRU II | 0 | 0 | 0 | 0 | 0 | 4,656 | 1,618 | 29,411 | 1,809 | 1,809 | Hexane |
| Flare FL1 *(from VRU II)* | 0 | 0 | 0 | 16.2 | 10.5 | 21.6 | 57.0 | 3,010 | 14.0 | 13.1 | HCl |
| Solids Handling (SHS) | 330.4 | 330.4 | 330.4 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | Toluene |
| Tank 81-87 | 0 | 0 | 0 | 0 | 0 | 1.3 | 0 | 0 | 1.3 | 1.3 | Toluene |
| F-01 & F-02 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0.1 | Toluene |
| Cooling Tower | 0.7 | 0.2 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Pot Still (modified in 2014)* | 0 | 0 | 0 | 0 | 0 | 4.2 | 0 | 0 | 4.17 | 4.17 | Toluene |
| Emergency Generator | 0.2 | 0.1 | 0.1 | 0.9 | 5.4 | 0.2 | 1.2 | 261 | 2.5E-03 | 1.2E-03 | Benzene |
| **2015 Modification Total** | **331.5** | **331.7** | **331.5** | **17.2** | **29.6** | **4,692** | **1,688** | **49,270** | **1,836** | **1,809** | **Hexane** |
| **Source Total** | **411.9** | **411.1** | **410.9** | **25.3** | **43.8** | **7,206** | **2,533** | **76,320** | **2,911** | **2,713** | **Hexane** |

| Limited PTE (TPY) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Emission Unit** | **PM** | **$PM_{10}$** | **$PM_{2.5}$** | **$SO_2$** | **NOx** | **VOC** | **CO** | **CO2e** | **Total HAPs** | **Highest Single HAP** | |
| HWM Storage | 0 | 0 | 0 | 0 | 0 | 8.9 | 0 | 0 | 8.9 | 8.9 | Toluene |
| Unit 2R | 0 | 0 | 0 | 0 | 0 | 21.3 | 0 | 0 | 21.3 | 21.3 | Toluene |
| Unit 2S | 0 | 0 | 0 | 0 | 0 | 21.3 | 0 | 0 | 21.3 | 21.3 | Toluene |
| Unit 24 | 0 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 2.2 | 2.2 | Toluene |
| Lab Pack | 0.6 | 0.6 | 0.6 | 0 | 0 | 2.5 | 0 | 0 | 2.5 | 2.5 | Toluene |
| Degassing | 0 | 0 | 0 | 0 | 0 | 17.0 | 0 | 0 | 0.28 | 0.28 | Toluene |
| SDS Shredder | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 2.6 | 2.6 | Toluene |
| SDS Shaker and conveyor | 77.7 | 77.7 | 77.7 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | |
| SDS-ATDU from NG | 0.1 | 0.5 | 0.5 | 0.04 | 6.8 | | 5.7 | 8,248 | 0.13 | 0.12 | Hexane |
| SDS-VRU | 0 | 0 | 0 | 0 | 0 | Less Than | 8.6 | 14,706 | 904.3 | 904.3 | Hexane |
| Flare FL1 (from VRU) | 0 | 0 | 0 | 8.1 | 5.2 | 23.4 | 28.5 | 1,505 | 13.4 | 12.6 | Toluene |
| Distillation | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0 | 2.3 | 2.3 | Toluene |
| Tanks 52-55 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0.5 | 0.5 | Toluene |
| Tanks 57-67 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0 | 0 | 1.9 | 1.9 | Toluene |
| Pot Still (modified in 2015)* | | | | | | | | | | | |
| Thin Film Evap | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,269 | 0.02 | 0.02 | Toluene |
| Heater | 0.02 | 0.1 | 0.1 | 0.01 | 1.1 | 0.1 | 0.9 | 1,322 | 0.02 | 0.02 | Toluene |
| Fugitive | 1.9 | 0.4 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Existing Total** | **80.4** | **79.4** | **79.4** | **8.1** | **14.2** | **Less Than 99.92** | **44.7** | **27,050** | **981.6** | **904.4** | **Hexane** |
| **2003 Modification Total** | **77.8** | **78.2** | **78.2** | **8.1** | **12.1** | **Less Than 24.9** | **42.9** | **24,459** | **923.3** | **904.4** | **Hexane** |
| *2015 Modification* | | | | | | | | | | | |
| SDS Shredder II | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 7.1 | 7.1 | Toluene |
| SDS-ATDU II | 0.3 | 1.0 | 1.0 | 0.1 | 13.7 | | 11.5 | 16,587 | 0.3 | 0.2 | Hexane |
| SDS VRU II | 0 | 0 | 0 | 0 | 0 | *Less | 17.6 | 29,411 | 1,809 | 1,809 | Hexane |
| Flare FL1 *(from VRU II)* | 0 | 0 | 0 | 16.2 | 10.5 | Than | 57.0 | 3,010 | 14.0 | 13.1 | HCl |
| Solids Handling (SHS) | 82.8 | 82.8 | 82.8 | 0 | 0 | 95.6 | 0 | 0 | 0 | 0 | Toluene |
| Tanks 81-87 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1.3 | 1.3 | Toluene |
| F-01 & F-02 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0.1 | 0.1 | Toluene |
| Cooling Tower | 0.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Pot Still (modified in 2015)* | 0 | 0 | 0 | 0 | 0 | 4.2 | 0 | 0 | 4.17 | 4.17 | Toluene |
| Emergency Generator | 0.2 | 0.1 | 0.1 | 0.9 | 5.4 | 0.2 | 1.2 | 261 | 2.5E-03 | 1.2E-03 | Benzene |
| **2015 Modification Total** | **83.9** | **84.1** | **83.9** | **17.2** | **29.6** | **Less Than 99.9** | **87.4** | **49,270** | **1,836** | **1,809** | **Hexane** |
| **Source Total** | **164.3** | **163.5** | **163.3** | **25.3** | **43.8** | **Less Than 199.9** | **132.0** | **76,320** | **2,817** | **2,713** | **Hexane** |

*The existing pot still is being modified and therefore is included as part of this 2015 modification.

**Appendix A: Emission Calculations**
**SDS Shredder II**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

The SDS Shredder II is similar to the existing SDS Shredder. Therefore,
VOC concentration is assumed to be equal to VOC concentration tested from the shredder exhaust for SDS.
SDS Shredder stack test (6/4/09) resulted in VOC emission rate of:

| | |
|---|---|
| 11.4 | ppmv as propane (C3H8) |
| 0.0002 | lb/hr as C2Cl4 |

SDS II design air flow rate from the shredder exhaust will be:

| | |
|---|---|
| 70 | scfm |

Controlled VOC/HAPs potential to emit

| | |
|---|---|
| 0.032 | lb/hr as C2Cl4 |
| 0.14 | tons/yr |

Uncontrolled VOC/HAPs PTE (assuming a carbon control efficiency of 98%) =

| | |
|---|---|
| 1.62 | lb/hr as C2Cl4 |
| 7.08 | tons/yr |

**Methodology**

Controlled PTE = flow rate (scfm) * 60 min/hr * emission rate (ppmv) /1000000 cf exhaust * (0.1196 lb propane/cf propane) * (497.49 lb C2Cl4/88.18 lb C3H8) =
Uncontrolled PTE (ton/yr) = Controlled PTE (ton/yr) / (1 - Control Efficiency (%))

**Appendix A: Emission Calculations**
**ATDU Burner**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| MMBtu/hr | mmBtu / mmscf | MMCF/yr |
|---|---|---|
| 32.0 | 1020 | 274.8 |

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| | PM* | PM10* | direct PM2.5* | SO2 | NOx | VOC | CO |
| Emission Factor in lb/MMCF | 1.9 | 7.6 | 7.6 | 0.6 | 100 **see below | 5.5 | 84 |
| Potential Emission in tons/yr | 0.26 | 1.04 | 1.04 | 0.08 | 13.7 | 0.76 | 11.5 |

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
PM2.5 emission factor is filterable and condensable PM2.5 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

**Methodology**
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

| | HAPs - Organics | | | | | |
|---|---|---|---|---|---|---|
| | Benzene | Dichlorobenze | Formaldehyde | Hexane | Toluene | **Total - Organics** |
| Emission Factor in lb/MMcf | 2.1E-03 | 1.2E-03 | 7.5E-02 | 1.8E+00 | 3.4E-03 | |
| Potential Emission in tons/yr | 2.886E-04 | 1.649E-04 | 1.031E-02 | 2.473E-01 | 4.672E-04 | **2.586E-01** |

| | HAPs - Metals | | | | | |
|---|---|---|---|---|---|---|
| | Lead | Cadmium | Chromium | Manganese | Nickel | **Total - Metals** |
| Emission Factor in lb/MMcf | 5.0E-04 | 1.1E-03 | 1.4E-03 | 3.8E-04 | 2.1E-03 | |
| Potential Emission in tons/yr | 6.871E-05 | 1.512E-04 | 1.924E-04 | 5.222E-05 | 2.886E-04 | **7.530E-04** |
| | | | | | **Total HAPs** | **2.593E-01** |
| | | | | | **Worst HAP** | **2.473E-01** |

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

| | Greenhouse Gas | | |
|---|---|---|---|
| | CO2 | CH4 | N2O |
| Emission Factor in lb/MMcf | 120,000 | 2.3 | 2.2 |
| Potential Emission in tons/yr | 16,489 | 3.16E-01 | 3.02E-01 |
| Summed Potential Emissions in tons/yr | 16,490 | | |
| CO2e Total in tons/yr | 16,587 | | |

**Methodology**
The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.
Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
CO2e (tons/yr) = CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O Potential Emission ton/yr x N2O GWP (298).

**Appendix A: Emission Calculations**
**Solids Handling System**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| Total VOC* (ug/m3) | VOC/HAPs PTE (lb/hr) | VOC/HAPs PTE (ton/yr) |
|---|---|---|
| 9365 | 0.154 | 0.7 |

*Based on results of similar unit (SDS 04)

| Unit | Maximum Air Flow (acfm) | Design Outlet Grain Loading (gr/scf) | Overall Control Efficiency | PTE of PM/PM10/PM2.5 After Control (lbs/hr) | PTE of PM/PM10/PM2.5 After Control (ton/yr) | PTE of PM/PM10/PM2.5 Before Control (lbs/hr) | PTE of PM/PM10/PM2.5 Before Control (ton/yr) | Limited PM/PM10/PM2.5 Emissions (lb/hr) | Limited PM/PM10/PM2.5 Emissions (ton/yr) | Equivalent Limited Control Efficiency |
|---|---|---|---|---|---|---|---|---|---|---|
| SDS 04 | 4400 | 0.04 | 98% | 1.51 | 6.6 | 75.43 | 330.4 | 18.90 | 82.8 | 74.9% |

Assume PM=PM10=PM2.5

**Methodology**

VOC/HAPs PTE (ton/yr) = VOC (ug/m3) x 1 g / 1000000 ug x 0.0283 $m^3$ / $ft^3$ x 1 lb / 453.6 g x air flow (acfm) x 60 min/1 hour x 1 ton/2000 lb x 8760 hrs/yr
PTE of PM/PM10/PM2.5 After Control (ton/yr) = air flow (acfm) x grain loading (gr/scf) x 1 lb / 7000 gr x 60 min/1 hour x 1 ton/2000 lb x 8760 hrs/yr
PTE of PM/PM10/PM2.5 Before Control = PTE of PM/PM10/PM2.5 After Control x (1 - control efficiency)
Equivalent Limited Control Efficiency = 1 - [Limited PM/PM10/PM2.5 Emissions (lb/hr) / PTE of PM/PM10/PM2.5 Before Control (lbs/hr)]

**Appendix A: Emission Calculations**
**Vapor Recovery Unit - VRU II**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

Emission factors for SDS II VRU based on testing performed on existing SDS VRU, designed in the Tradebe Title V permit as SDS 07

Air Flow Rate to Flare for SDS 07

Max Air Flow 384.92 scfm (saturated) 5% percent moisture
Dry air flow 365.674

Operating Level During Test for SDS 07

Average process rate during sampling = 2.19 tons per hour

| Constituent | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Average | CFM | Density (lb/cf) | Uncontrolled PTE (lb/hr) | Uncontrolled VOC (lb/hr) | |
|---|---|---|---|---|---|---|---|---|---|---|
| H2 | 9.16 | 10.95 | 3.73 | 6.39 | 7.56 | 27.64 | NA | NA | | |
| CO | 10.78 | 10.51 | 7.82 | 10.76 | 9.97 | 36.45 | 0.074 | 161.83 | | |
| N2 | 36.6 | 44.1 | 55.4 | 44.1 | 45.05 | 164.74 | NA | NA | | |
| O2 | 0.76 | 0.75 | 0.64 | 0.76 | 0.73 | 2.66 | NA | NA | | |
| H2S | <0.03 | <0.03 | 0.288 | <0.03 | 0.07 | 0.26 | 0.0911 | 1.44 | | |
| CO2 | 5.45 | 5.81 | 5.04 | 6.85 | 5.79 | 21.16 | 0.117 | 148.57 | | |
| CH4 | 16.26 | 12.15 | 8.33 | 11.29 | 12.01 | 43.91 | 0.0424 | 111.70 | | |
| Acetylene | 0.01 | <0.01 | 0.03 | 0.01 | 0.01 | 0.05 | 0.0697 | 0.19 | 0.19 | |
| Ethylene | 6.06 | 4.07 | 5.35 | 6.22 | 5.43 | 19.84 | 0.0746 | 88.79 | 88.79 | |
| Ethane | 3.63 | 2.39 | 2.65 | 2.83 | 2.88 | 10.51 | NA | NA | | |
| Propane | 0.611 | 0.524 | 0.628 | 0.472 | 0.56 | 2.04 | 0.1196 | 14.66 | 14.66 | |
| Propylene | 5.06 | 3.51 | 3.24 | 3.89 | 3.93 | 14.35 | 0.111 | 95.59 | 95.59 | |
| Other C4s | 0.011 | <0.01 | 0.122 | <0.01 | 0.03 | 0.12 | 0.1582 | 1.15 | 1.15 | |
| i-Butane | 0.021 | 0.036 | 0.033 | 0.061 | 0.04 | 0.14 | 0.1582 | 1.31 | 1.31 | |
| n-Butane | 0.052 | 0.06 | 0.101 | 0.04 | 0.06 | 0.23 | 0.1582 | 2.20 | 2.20 | |
| Butenes | 1.51 | 1 | 1.29 | 2.03 | 1.46 | 5.33 | 0.148 | 47.33 | 47.33 | |
| Other C5s | 0.28 | 0.231 | 0.277 | 0.345 | 0.28 | 1.04 | 0.1904 | 11.83 | 11.83 | |
| Neo Pentane | 0.114 | 0.103 | 0.115 | 0.116 | 0.11 | 0.41 | 0.1904 | 4.68 | 4.68 | |
| i-Pentane | 0.004 | 0.006 | 0.004 | 0.004 | 0.00 | 0.02 | 0.1904 | 0.19 | 0.19 | |
| n-Pentane | 0.088 | 0.053 | 0.097 | 0.094 | 0.08 | 0.30 | 0.1904 | 3.47 | 3.47 | |
| 1-Pentene | 0.111 | 0.112 | 0.229 | 0.128 | 0.15 | 0.53 | 0.1852 | 5.89 | 5.89 | |
| Other C6s | 0.136 | 0.119 | 0.166 | 0.179 | 0.15 | 0.55 | 0.2274 | 7.48 | 7.48 | |
| Hexane + | 3.26 | 3.47 | 4.38 | 3.39 | 3.63 | 13.26 | 0.2274 | 180.86 | 180.86 | (assumed to be HAPs) |
| Gross HV (dry) (BTU/cf) | 761 | 622 | 643 | 688 | 678.50 | | | | | |
| Gross HV (sat) (BTU/cf) | 748 | 611 | 632 | 676 | 666.75 | | | | | |
| | 99.968 | 99.954 | 99.96 | 99.959 | 99.9603 | 365.529 | | | 465.63 | |

Constituents Contained in Exhaust Stream to Flare Based on SDS VRU Sampling Performed December 2013.

1. A total of four samples were collected and analyzed for gaseous constituents. The table below summarizes each of the four samples in percent by volume on a dry basis.
2. An average value for each gaseous constituent was computed. This was then used to determine the cubic feet per hour of each gas by multiplying the avg % by volume by the dry air flow rate in cfh.
3. The mass emission rate of each constituent was computed by multiplying the cubic feet per hour air flow rate by the vapor density of the constituent.

4. Materials classified as volatile organic compounds (VOCs) were totaled to determine total VOC emissions.
5. Uncontrolled emission rates during sampling and emission factors for regulated air pollutants are summarized below:

Nitrogen Oxides:

AP-42 emission factor (Table 13.5-1) expressed as 0.068 lb/mmBtu
15.40 mmBtu/hr heat input (using average Gross HV (saturated) and the saturated air flow rate)
1.05 lb/hr (controlled and uncontrolled)
0.48 lb/ton (controlled and uncontrolled)

Carbon Monoxide:

161.83 pounds per hour (based on uncontrolled emissions from flare gas analysis above)
73.90 pounds per ton processed (uncontrolled based on gas analysis)
AP-42 emission factor (table 13.5-1) expressed as 0.37 lb/mmBtu
5.70 lb/hr (controlled using AP-42 emission factor)
2.60 lb/ton (controlled using AP-42 emission factor)

VOC:

465.63 pounds per hour
212.61 pounds per ton processed
AP-42 emission factor (Table 13.5-1) expressed as 0.14 lb/mmBtu)
2.16 lb/hr (controlled using AP-42 emission factor)
0.98 lb/ton (controlled using AP-42 emission factor)

HAPs

the Hexane+ category is assumed to be 100% organic HAPs
180.86 pounds per hour
82.58 pounds per ton processed
Control efficiency for HAPs assumed equal to destruction efficiency for VOC
0.84 lb/hr (controlled)
0.38 lb/ton (controlled)

CO2

148.57 pounds per hour (controlled and uncontrolled based on emissions from flare gas analysis above)
67.84 pounds per ton processed (controlled and uncontrolled)

CH4

111.70 pounds per hour (uncontrolled based on uncontrolled emissions from flare gas analysis above)
51.01 pounds per ton processed (uncontrolled based on gas analysis)
Control efficiency for CH4 assumed equal to destruction efficiency for VOC
0.52 pounds per hour (controlled)
0.24 pounds per ton (controlled)

CO2e

Global Warming Potential (GWP) for methane = 25
2941.14 pounds per hour (uncontrolled)
1342.98 pounds per ton processed (uncontrolled)
161.50 pounds per hour (controlled)
73.74 pounds per ton (controlled)

SO2

560.67 $mg/m^3$ sulfur based on average of three samples collected
1.62 lb/hr SO2 during sampling (controlled and uncontrolled)
0.74 lb SO2 produced per ton of waste processed (controlled and uncontrolled)

HCl

1705 $mg/m^3$ Cl based on one sample collected
2.53 lb/hr HCl emissions
1.15 pounds per ton (controlled and uncontrolled)
0.6 lb HCl produced per ton of Waste processed (based on analysis for existing SDS unit and anticipated chlorine content of materials processed)

HF

105 $mg/m^3$ F based on one sample collected
0.16 lb/hr HF emissions
0.07 lb/ton (controlled and uncontrolled)
0.038 lb HF produced per ton of waste processed (based on analysis for existing SDS unit and anticipated fluorine content of materials processed

**Appendix A: Emission Calculations**
**Vapor Recovery Unit - VRU II**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| | |
|---|---|
| 5 | Maximum Throughput (tons of SDS II vapor product/hr) |
| 23827 | Limited Throughput (tons of SDS II vapor product/year) |
| 1.48 | CO Limit (lb/ton SDS II vapor product processed) |

**Emissions from VRU II**

| Pollutant | Uncontrolled Emission Factor (lb/ton SDS II vapor product processed) | Uncontrolled PTE (lb/hr) | Uncontrolled PTE (ton/yr) | Control Efficiency | Controlled Emissions (lb/hr) | Controlled and Limited Emissions (ton/yr)* | Overall Emission Reduction |
|---|---|---|---|---|---|---|---|
| VOCs | 212.6 | 1063.1 | 4656.3 | 98% | 21.3 | 50.7 | 98.91% |
| CO | 73.9 | 369.5 | 1618.3 | 98% | 7.4 | 17.6 | 98.91% |
| Hexane | 82.6 | 412.9 | 1808.6 | 98% | 8.3 | 19.7 | 98.91% |
| CO2 | 67.8 | 339.2 | 1485.7 | 0% | 339.2 | 808.2 | 45.60% |
| CH4 | 51.0 | 255.0 | 1117.0 | 98% | 5.1 | 12.2 | 98.91% |
| CO2e | 1343.0 | 6714.9 | 29411.4 | | NA | NA | |

*Emissions limit in order to keep the 2014 Modification to a minor modification for 326 IAC 2-3 (Emission Offset) and 326 IAC 2-2 (PSD).

**Emissions created by flare**

| Pollutant | Emission Factor (lb/ton) | Potential Emissions (lb/hr) | Potential Emissions (ton/yr) |
|---|---|---|---|
| NOx | 0.48 | 2.4 | 10.5 |
| VOCs | 0.98 | 4.9 | 21.6 |
| CO | 2.60 | 13.0 | 57.0 |
| SO2 | 0.74 | 3.7 | 16.2 |
| HCl | 0.60 | 3.0 | 13.1 |
| HF | 0.04 | 0.2 | 0.8 |

| Pollutant | Captured CH4 Emissions (lb/ton) | PTE (tons/yr) | GWP | Emissions (ton/yr CO2e) |
|---|---|---|---|---|
| CO2 | 51 | 3,010 | 1 | 3,010 |

**Methodology**
Uncontrolled PTE (ton/yr) = Emission factor (lb/ton) x Max Throughput (ton/hr) x 8760 hr/yr
Controlled PTE (ton/yr) = Unontrolled PTE (ton/yr) x (1 - Control Eff.)
Limited PTE (ton/yr) = Emission factor (lb/ton) x Limited Throughput (ton/yr) x 1 ton/2000 lb
Limited and Controlled PTE (ton/yr) = Limited PTE (ton/yr) x (1 - Control Eff.)

**Appendix A: Emission Calculations**
**Vapor Recovery Unit - VRU**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| | |
|---|---|
| 2.5 | Maximum Throughput (tons of SDS vapor product/hr) |
| 11686 | Limited Throughput (tons of SDS vapor product/year) |
| 1.48 | CO Limit (lb/ton SDS vapor product processed) |

**Emissions from VRU**

| Pollutant | Uncontrolled Emission Factor (lb/ton SDS vapor product processed) | Uncontrolled PTE (lb/hr) | Uncontrolled PTE (ton/yr) | Control Efficiency | Controlled Emissions (lb/hr) | Controlled and Limited Emissions (ton/yr) | Overall Emission Reduction |
|---|---|---|---|---|---|---|---|
| VOC | 212.6 | 531.5 | 2328.1 | 98% | 10.6 | 24.8 | 98.93% |
| CO | 73.9 | 184.7 | 809.2 | 98% | 3.7 | 8.6 | 98.93% |
| HAPs | 82.6 | 206.5 | 904.3 | 98% | 4.1 | 9.7 | 98.93% |
| CO2 | 67.8 | 169.6 | 742.8 | 0% | 169.6 | 396.4 | 46.64% |
| CH4 | 51.0 | 127.5 | 558.5 | 98% | 2.6 | 6.0 | 98.93% |
| CO2e | 1343.0 | 3357.5 | 14705.7 | | NA | 7847.1 | |

**Emissions created by flare**

| Pollutant | Emission Factor (lb/ton) | Potential Emissions (lb/hr) | Potential Emissions (ton/yr) |
|---|---|---|---|
| NOx | 0.48 | 1.2 | 5.2 |
| VOC | 0.98 | 2.5 | 10.8 |
| CO | 2.60 | 6.5 | 28.5 |
| SO2 | 0.74 | 1.8 | 8.1 |
| HCl | 1.15 | 2.9 | 12.6 |
| HF | 0.07 | 0.2 | 0.8 |

| Pollutant | Captured CH4 Emissions (lb/ton) | PTE (tons/yr) | GWP | Emissions (ton/yr CO2e) |
|---|---|---|---|---|
| CO2 | 51 | 1,505 | 1 | 1,505 |

**Methodology**
Uncontrolled PTE (ton/yr) = Emission factor (lb/ton) x Max Throughput (ton/hr) x 8760 hr/yr
Controlled PTE (ton/yr) = Unontrolled PTE (ton/yr) x (1 - Control Eff.)
Limited PTE (ton/yr) = Emission factor (lb/ton) x Limited Throughput (ton/yr) x 1 ton/2000 lb
Limited and Controlled PTE (ton/yr) = Limited PTE (ton/yr) x (1 - Control Eff.)

**Appendix A: Emission Calculations**
**Tank VOC Emissions**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| P&ID Item description | | Tank 81 | Tank 82 | Tank 83 | Tank 84 | Tank 85 | Tank 87 | Tank 86 | F-02 | F-01 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oil/Solvent Product Storage | Oil/Solvent Product Storage | Oil/Solvent Product Storage | Oil/Solvent Product Storage | Process Water | Oil/Solvent Storage | Process Water/Light Sludge Waste Storage | VRU Interceptor | Oil Water Separator | | |
| Stack ID | | SDS II 08 | SDS II 08 | SDS II 08 | SDS II 08 | SDS II 07 | SDS II 06 | SDS II 06 | SDS II 03 | SDS II 03 | | |
| Tank/Vessel nominal Capacity | Gal | 12000 | 12000 | 12000 | 12000 | 22000 | 22000 | 22000 | 3700 | 22000 | | |
| Type | | Vertical, cylindrical, cone bottom | Vertical, cylindrical, cone bottom | Vertical, cylindrical, cone bottom | Vertical, cylindrical, cone bottom | Vertical, cylindrical, cone bottom | Vertical, cylindrical, cone bottom | Vertical, cylindrical, cone bottom | Fabricated, flat sided process vessel | Fabricated, flat sided process vessel | | |
| Height | Inches | 300 | 300 | 300 | 300 | 380 | 380 | 380 | 75 approx | 110 approx | | |
| Diameter | Inches | 120 | 120 | 120 | 120 | 138 | 138 | 138 | N/A | N/A | | |
| Length | Inches | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 180 average | 450 average | | |
| Width | Inches | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 63 average | 105 average | | |
| Anticipated throughput: | | | | | | | | | | | | |
| US gallons/day | | 1000 | 1000 | 1000 | 1000 | 3500 | 2000 | 3500 | | | | |
| Level | | Variable | Variable | Variable | Variable | Variable | Variable | Variable | Fixed ~85% | Fixed ~90% | | |
| Tank material | | Carbon Steel | Carbon Steel | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel | | |
| Tank color | | White | White | Self Colour | Self Colour | Self Colour | Self Colour | Self Colour | Self Colour | Self Colour | | |
| Venting to carbon | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | |
| Turnovers per year | | 30.4 | 30.4 | 30.4 | 30.4 | 58.1 | 33.2 | 58.1 | 24.0 | 24.0 | | |
| Roof Type (Cone/Dome) | | Cone | Cone | Cone | Cone | Cone | Cone | Cone | Cone | Cone | | |
| Height (feet) | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| Roof Slope | | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | | |
| Breather Vent Settings (psig) | Vacuum | -0.045 | -0.045 | -0.045 | -0.045 | -0.045 | -0.045 | -0.045 | -0.03 | -0.03 | | |
| Breather Vent Settings (psig) | Pressure | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.03 | 0.03 | | |
| Site Selection | | Chicago, IL | Chicago, IL | Chicago, IL | Chicago, IL | Chicago, IL | Chicago, IL | Chicago, IL | Chicago, IL | Chicago, IL | | |
| Tank Contents | | Toluene | Toluene | Toluene | Toluene | 40% toluene | Toluene | 40% toluene | 50% Toluene | 50% Toluene | | |
| Working Losses (lbs) | | 211.33 | 211.33 | 211.47 | 211.47 | 462.63 | 433.85 | 518.53 | 37.70 | 219.91 | | |
| Breathing Losses (lbs) | | 9.54 | 9.54 | 9.54 | 9.54 | 20.65 | 24.59 | 24.59 | 5.54 | 16.93 | | |
| Total VOC Emissions (lbs) | | 220.87 | 220.87 | 221.01 | 221.01 | 483.28 | 458.44 | 543.12 | 43.24 | 236.84 | | |
| Total VOC Emissions (tpy) - Maximum Uncontrolled | | 0.110 | 0.110 | 0.111 | 0.111 | 0.242 | 0.229 | 0.272 | 0.022 | 0.118 | **1.32** | **Total 81-87** |
| VOC Control Efficiency | | 98.0% | 98.0% | 98.0% | 98.0% | 98.0% | 98.0% | 98.0% | 98.0% | 98.0% | | |
| Total VOC Emissions (tpy) - Maximum Controlled | | 0.0022 | 0.0022 | 0.0022 | 0.0022 | 0.0048 | 0.0046 | 0.0054 | 0.0004 | 0.0024 | **0.02** | **Total 81-87 (controlled)** |

Emissions calculated from EPA TANKS data

**Appendix A: Emission Calculations**
**Cooling Tower**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Stack ID** Insignficant
**Source Name** Cooling Tower

| Operating Parameters | | | Note |
|---|---|---|---|
| Water Circulation Rate of all cells (R) | 1,200 | gpm | |
| Total Liquid Drift (S) | 0.005 | % | |
| Density of Water (D) | 8.3453 | lb/gal | |
| Expected TDS/TSS of Circulated Water (C) | 5000 | ppmw | |
| Operating Time: | 24 | (hr/day) | |
| | 8760 | (hr/year) | |

| Pollutant | Emission Factor | Unit | Emission Rate (lb/hr) | Emission Rate (tpy) | Note |
|---|---|---|---|---|---|
| PM | 2.09E-03 | lb/10^3 gal | 0.15 | 0.66 | 1 |
| PM10 | 29.97 | % of PM | 0.05 | 0.20 | 2 |
| PM2.5 | 0.18 | % of PM | 2.65E-04 | 1.16E-03 | 2 |

**Notes:**
(1) USEPA AP-42, Chapter 13.4 *Wet Cooling Towers*, Table 13.4-1 [EF (lb/1000 gal) = 1,000*D*(S/100)*(C/1,000,000)]
(2) Calculating Realistic PM10 Emissions from Cooling Towers, Joel Reisman and Gordon Frisbie, Environmental Progress (Vol 21, No 2), July 2002

Max TDS = 5,000 ppmw

| EPRI Droplet Diameter (µm) | Droplet Volume ($\mu m^3$) | Droplet Mass (µg) | Particle Mass (solids) (µg) | Solid Particle Volumne ($\mu m^3$) | Solid Particle Diameter (µm) | EPRI % Mass Smaller | |
|---|---|---|---|---|---|---|---|
| 10 | 524 | 5.24E-04 | 2.62E-06 | 1.19 | 1.315 | 0.000 | |
| | | | *Interpolation --->* | | 2.500 | 0.177 | **0.177 % of PM is PM2.5** |
| 20 | 4189 | 4.19E-03 | 2.09E-05 | 9.52 | 2.630 | 0.196 | |
| 30 | 14137 | 1.41E-02 | 7.07E-05 | 32.13 | 3.944 | 0.226 | |
| 40 | 33510 | 3.35E-02 | 1.68E-04 | 76.16 | 5.259 | 0.514 | |
| 50 | 65450 | 6.54E-02 | 3.27E-04 | 148.75 | 6.574 | 1.816 | |
| 60 | 113097 | 1.13E-01 | 5.65E-04 | 257.04 | 7.889 | 5.702 | |
| 70 | 179594 | 1.80E-01 | 8.98E-04 | 408.17 | 9.203 | 21.348 | |
| | | | *Interpolation --->* | | 10.000 | 29.971 | **29.971 % of PM is PM10** |
| 90 | 381704 | 3.82E-01 | 1.91E-03 | 867.51 | 11.833 | 49.812 | |
| 110 | 696910 | 6.97E-01 | 3.48E-03 | 1583.89 | 14.462 | 70.509 | |
| 130 | 1150347 | 1.15E+00 | 5.75E-03 | 2614.42 | 17.092 | 82.023 | |
| 150 | 1767146 | 1.77E+00 | 8.84E-03 | 4016.24 | 19.722 | 88.012 | |
| 180 | 3053628 | 3.05E+00 | 1.53E-02 | 6940.06 | 23.666 | 91.032 | |
| 210 | 4849048 | 4.85E+00 | 2.42E-02 | 11020.56 | 27.610 | 92.468 | |
| 240 | 7238229 | 7.24E+00 | 3.62E-02 | 16450.52 | 31.554 | 94.091 | |
| 270 | 10305995 | 1.03E+01 | 5.15E-02 | 23422.72 | 35.499 | 94.689 | |
| 300 | 14137167 | 1.41E+01 | 7.07E-02 | 32129.92 | 39.443 | 96.288 | |
| 350 | 22449298 | 2.24E+01 | 1.12E-01 | 51021.13 | 46.017 | 97.011 | |
| 400 | 33510322 | 3.35E+01 | 1.68E-01 | 76159.82 | 52.591 | 98.34 | |
| 450 | 47712938 | 4.77E+01 | 2.39E-01 | 108438.50 | 59.165 | 99.071 | |
| 500 | 65449847 | 6.54E+01 | 3.27E-01 | 148749.65 | 65.738 | 99.071 | |
| 600 | 113097336 | 1.13E+02 | 5.65E-01 | 257039.40 | 78.886 | 100.000 | |

Calculations based on approach presented in: Calculating Realistic PM10 Emissions from Cooling Towers
Joel Reisman and Gordon Frisbie, Environmental Progress (Vol 21, No 2), July 2002

**Appendix A: Emissions Calculations**
**VOC and HAP**
**From HWF Tank Storage (Unit 1)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| | | | | Unscaled | | | Scaled (up to 52 wk/yr) | | |
|---|---|---|---|---|---|---|---|---|---|
| Tank # | Capacity (gal) | Actual Throughput (gpy) | Max Throughput (gpy) | Uncontrolled VOC Emissions, lb/yr (TANKS 4.0) | Uncontrolled VOC Emissions, ton/yr | Controlled VOC Emissions, ton/yr | Uncontrolled VOC Emissions, lb/yr (TANKS 4.0) | Uncontrolled VOC/HAP Emissions, ton/yr | Controlled VOC/HAP Emissions, ton/yr |
| 29[a] | 20,057 | 501,425 | 1,002,850 | 1,933 | 0.97 | 0.010 | 2,010 | 1.01 | 0.010 |
| 1R | 12,690 | | 1,625,000 | 1,432 | 0.72 | 0.007 | 1,432 | 0.72 | 0.007 |
| 4 | 12,690 | | 1,625,000 | 1,432 | 0.72 | 0.007 | 1,432 | 0.72 | 0.007 |
| 18 | 20,353 | | 1,625,000 | 2,027 | 1.01 | 0.010 | 2,027 | 1.01 | 0.010 |
| 19 | 20,353 | | 1,625,000 | 2,027 | 1.01 | 0.010 | 2,027 | 1.01 | 0.010 |
| 20 | 20,353 | | 1,625,000 | 2,027 | 1.01 | 0.010 | 2,027 | 1.01 | 0.010 |
| 21 | 20,353 | | 1,625,000 | 2,027 | 1.01 | 0.010 | 2,027 | 1.01 | 0.010 |
| 22 | 20,353 | | 1,625,000 | 2,027 | 1.01 | 0.010 | 2,027 | 1.01 | 0.010 |
| 23 | 20,353 | | 1,625,000 | 2,027 | 1.01 | 0.010 | 2,027 | 1.01 | 0.010 |
| 6 | 4,386 | | 228,072 | 424 | 0.21 | 0.002 | 424 | 0.21 | 0.002 |
| 7 | 2,900 | | 150,800 | 275 | 0.14 | 0.001 | 275 | 0.14 | 0.001 |
| | | **TOTAL ALL TANKS** | | 17,658 | 8.83 | 0.088 | 17,735 | **8.87** | **0.089** |

[a]source assumed one turnover per week, 50 weeks per year. Emissions from this tank are scaled up to 52 weeks per year.

Note: Above calcultions are from pemit number T 089-29424-00345, issued on February 25, 2011.

**Appendix A: Emissions Calculations**
**VOC and HAP**
**From HWF Shipping and Receiving (Unit 2)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

Receiving (Unit 2R)
Unloading of tank cars and rail cars
VOC emissions are estimated using following equation, from Section 5.2 of AP-42:

$L_L = 12.46 * (S*P*M)/T$

| | | |
|---|---|---|
| LL = Loading loss per 1,000 gal liquid loaded | Used these values: | |
| S = saturation factor (from Table 5.2-1 of AP-42) | S | 0.6 |
| P = true vapor pressure of liquid load (psia) | P | 0.97 |
| M = molecular weight of vapors (lb/lb-mole) | M | 75 |
| T = temperature of bulk liquid loaded (deg. R) | T | 530 |

| | | |
|---|---|---|
| $L_L$ = | 1.03 | lb VOC/1,000 gal |
| Max throughput = | 17,200 | gal/hr |
| Max throughput = | 150,672,000 | gal/yr |
| Limited throughput = | 41,450,000 | gal/yr |
| **Potential VOC/HAP =** | **77.3** | **TPY** |
| **Limited VOC/HAP =** | **21.3** | **TPY** |

Shipping (Unit 2S)
Submerged filling of rail cars.
VOC emissions are estimated using following equation, from Section 5.2 of AP-42:

$L_L = 12.46 * (S*P*M)/T$

| | | |
|---|---|---|
| LL = Loading loss per 1,000 gal liquid loaded | Used these values: | |
| S = saturation factor (from Table 5.2-1 of AP-42) | S | 0.6 |
| P = true vapor pressure of liquid load (psia) | P | 0.97 |
| M = molecular weight of vapors (lb/lb-mole) | M | 75 |
| T = temperature of bulk liquid loaded (deg. R) | T | 530 |

| | | |
|---|---|---|
| $L_L$ = | 1.03 | lb VOC/1,000 gal |
| Max throughput = | 13,200 | gal/hr |
| Max throughput = | 115,632,000 | gal/yr |
| Limited throughput = | 41,450,000 | gal/yr |
| **Potential VOC/HAP =** | **59.3** | **TPY** |
| **Limited VOC/HAP =** | **21.3** | **TPY** |

Methodology:
Potential VOC/HAP (ton/yr) = Emission factor (lb/1000 gal) / 1000 x Max Throughput (gal/yr) x 1 ton / 2000 lb
Limited VOC/HAP (ton/yr) = Emission factor (lb/1000 gal) / 1000 x Limited Throughput (gal/yr) x 1 ton / 2000 lb
Note: Both Unit 2R and 2S include shipping/receiving Area 2 and Area 8.

**Appendix A: Emissions Calculations**
**VOC and HAP**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

Tank 24 (SF Unit)
Tank HP24 Hydropulperis operated on a batch process. The tank is filled, and then pumped into other tanks in Area 2.

| (max production) | |
|---|---|
| 2,310 | gallons (working) |
| 6 | hrs (to fill) |
| 385 | gals/hr |

Dimensions

| | diameter | sidewall | dome | bottom |
|---|---|---|---|---|
| | 9 | 6 | 1.5 | 1.5 |
| volume | 3,010 | | | |
| *volume working* | *2,310* | | | |

| max production (worst case emissions) annual | |
|---|---|
| 385 | gals/hr |
| 8401 | # Hrs /Yr (SERVICE FACTOR) |
| 3,234,323 | gals/yr |

**HP24 Throughput (in gallons)**

| | hourly | annual |
|---|---|---|
| **PTE** | **385** | **3,234,323** |
| HP 24 filled | 6 | hours |
| contents transferred | 0.33 | hours |

service factor calculation

7.67 hrs process, .33 hrs transfer from HP 24 to Area
7.67 / 8 = 95.9 % operation
8760 x 95.90% = 8401 hours of operation / year

check service factor

385 8760 95.90% 3,234,323 gals /yr

**Production based "ACTUAL" numbers**

| 2013 11 months | lbs/gal | gallons | / | | gals/mth | | gals/ yr ca | hrs /yr | gals/hr |
|---|---|---|---|---|---|---|---|---|---|
| **8,367,368** | **8.34** | **1,003,282** | **/** | **11** | **91,207** | **x 12 =** | **1,094,489** | **2944** | **372** |

| gals | | time to empty | | gals/min |
|---|---|---|---|---|
| 2310 | / | 20 | = | 115.5 |

Potential Emissions

2310 gallons per filling event
3,234,323 max gallons per year
1400 max filling events per year

Compute emissions using liquid loading loss equation from AP-42 Section 5.2

LL = 12.46 (S*P*M)/T
where:
LL = Liquid loading uncontrolled emission factor in lb/1000 gallons
S = Saturation Factor (use worst case factor of 1.45)
P = true vapor pressure (use worst case factor for tolune of 0.435 @ 70 deg F)
M = molecular weight of vapors (use mw of toluene, 92.13)
T = Temperature of liquid (deg R) (assume ambient temp of 70 deg F, 530 deg R)

LL = 1.37 lb/1000 gal
Annual uncontrolled emissions = 4418.6 lbs/yr
**2.21** tons/yr

Annual Controlled Emissions = 98% (controlled using carbon canisters; assumed 98% efficient)
88.4 lbs/yr
0.022 tons/yr

**Appendix A: Emissions Calculations**
**VOC and HAP**
**From Lab Pack/DePack Operation (Unit 4)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Emissions from organic liquid depacking (LP B1 of Unit 4)**

Organic liquids are depacked in Booth 1 (LP B1).
Max 27375 containers/yr
Assumptions[a]:
75.5 gal/hr
7.5 lb/gal average density of depacked liquids

Uncontrolled emissions were expected to be low (materials are not agitated, heated, or exposed for long periods of time).
Estimate of emissions as % of quantity depacked: 0.10%

75.5 gal/hr * 7.5 lb/gal * 0.1% = 0.56625 lb VOC/hr **2.48 TPY VOC/HAP uncontrolled**

Estimated control efficiency of carbon adsorber packs: 98% **0.05 TPY VOC/HAP controlled**

[a] These figures are estimates. LP B1 can also vent gaseous emissions from cylinders. However, the depacking of organic liquids is a worst case emissions scenario and therefore presented here.

**Emissions from the packing of dry chemicals (LP B4 of Unit 4) - insignificant activity**

*Baghouse information:*

| | |
|---|---|
| Amount of particulate captured by baghouse per year: | 275 lbs |
| Operating schedule of baghouse: | 2,080 hrs/yr |
| Estimated capture efficiency of baghouse: | 99.90% |

(8 hrs/day, 5 days/week, 52 weeks/yr)

***Calculations:***
Amount of particulate captured by baghouse per 8,760 hrs:
275 lbs * (8,760 hrs/yr)/(2,080 hrs/yr) * 1 ton/2,000 lbs = 0.58 tons PM/yr

Estimated uncontrolled particulate emissions per 8,760 hours:
0.58 tons PM/yr / (1/0.999) = **0.58** tons PM/yr uncontrolled

Note: Above calcultions are from pemit number T 089-29424-00345, issued on February 25, 2011.

**Appendix A: Emissions Calculations**
**VOC from Degassing Operation**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Emissions from Degassing Unit (After installation of flare)**

| Type | Maximum Gas VOC Throughput* ton/yr | Maximum Gas HAP Throughput* ton/yr | VOC/HAP Absorbed % | Potential VOC Emissions Before Flare Control (tons/yr) | Potential HAP Emissions Before Flare Control (tons/yr) | Flare Control Efficiency % | Potential VOC Emissions After Flare Control (tons/yr) | Potential HAP Emissions After Flare Control (tons/yr) |
|---|---|---|---|---|---|---|---|---|
| Absorbable organics | 396.8 | 14.1 | 98% | 7.9 | 0.28 | 98% | 0.2 | 0.01 |
| Light end hydrocarbons | 9.0 | -- | 0% | 9.0 | -- | 98% | 0.2 | -- |
| **Totals:** | 405.8 | | | **17.0** | | | **0.3** | **0.01** |

**Emissions from Degassing Unit (Prior to installation of flare)**

| Unit | Maximum Gas VOC Throughput* ton/yr | Maximum Gas HAP Throughput* ton/yr | VOC/HAP Absorbed % | Potential VOC Emissions Before Carbon Adsorber Control (tons/yr) | Potential HAP Emissions Before Carbon Adsorber Control (tons/yr) | Carbon Adsorber Unit Efficiency % | Potential VOC Emissions After Carbon Adsorber Control (tons/yr) | Potential HAP Emissions After Carbon Adsorber Control (tons/yr) |
|---|---|---|---|---|---|---|---|---|
| Degassing | 198.4 | 3.1 | 98% | 4.0 | 0.06 | 98% | 0.1 | 0.00 |

*Estimated maximum throughput provided by source based on historic mix of actual cylinders processed. 'Absorbable' gases processed include organic, inorganic, halogenated and inert.

Potential VOC/HAP Emissions Before Flare Control (ton/yr) = Maximum Gas Throughput VOC/HAP (ton/yr) x (1 -VOC/HAP Condensed (%))

Potential VOC/HAP Emissions After Flare Control (ton/yr) = Potential VOC/HAP Emissions Before Flare Control (ton/yr) * (1 - Flare Control Effiency)

Note: Inorganic HAPs are Chlorine and Fluorine and Organic HAPs include 1,3 butadiene, ethylene oxide and others.

Note: The degassing operation includes a reactor tank into which gasses are vented and a pressurized “shock” tank that will condense gasses into liquids for collection and offsite shipment, with remaining gasses controlled by a flare or carbon cannisters.

Note: The use of a flare control system allows cylinders to be degassed more quickly, as the flare can handle a higher air flow rate than is possible with carbon canisters. Further increases in throughput could only be accomplished through a change to a larger reactor or by the installation of a flare that could handle a higher air flow rate.

Note: The addition of a flare control system now allows for the degassing of cylinders containing light end hydrocarbons. These gases are not absorbed into liquid by the shock tank, and therefore assumed to be 100% emitted as VOC (0% absorbed).

**Appendix A: Emission Calculations**
**VOC and HAP**
**From the SDS Shredder (SDS)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**From the SDS Shredder (SDS)**
Process Description:

Max. Throughput Rate: 4.0 tons/hr
VOC Emission Factor: 0.15 lbs/ton (This is provided by the source, based on the stack test results from a similar unit)

Control Equipment: Carbon Adsorption System for VOC/HAP Control
Control Efficiency: 98.0%

Potential to Emit VOC/HAP before Control:
Assume all the VOC emissions are equal to HAP emissions because the HAP contents in the received waste very greatly.

PTE of VOC/HAP before Control = 4 tons/hr x 0.15 lbs/ton x 8760 hr/yr x 1 ton/2000 lbs = **2.63 tons/yr**

Potential to Emit VOC/HAP after Control:
PTE of VOC/HAP after Control = 4 tons/hr x 0.15 lbs/ton x 8760 hr/yr x 1 ton/2000 lbs x (1- 98%) = **0.05 tons/yr**

| | | | |
|---|---|---|---|
| VOC | **Limited** | 0.028 | lb/hr |
| | SDS Shredder | **0.12** | ton/yr |

**From the SDS Shaker and conveyor**
Potential to Emit PM After Control:

| Unit | Maximum Air Flow (acfm) | Design Outlet Grain Loading (gr/acf) | Overall control efficiency | After Control Emissions (lb/hr) | After Control Emissions (ton/yr) | Before Control Emissions (lb/hr) | Before Control Emissions (ton/yr) |
|---|---|---|---|---|---|---|---|
| SDS 04 | 4400 | 0.03 | 90% | 1.13 | 5.0 | 11.31 | 49.6 |
| SDS 09 | 2500 | 0.03 | 90% | 0.64 | 2.8 | 6.43 | 28.2 |
| Total | | | | | 7.8 | | 77.7 |

Note: These emissions were previously calculated based on maximum air flow of 500 acfm.
Assume all the PM emissions are equal to PM10 emissions.

**Appendix A: Emission Calculations**
**Natural Gas Combustion**
**(MMBtu/hr < 100)**
**From the NG Combustion in Anaerobic Thermal Desorption Unit (ATDU)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| Heat Input Capacity MMBtu/hr | Potential Throughput MMCF/yr |
|---|---|
| 15.6 | 136.7 |

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| | PM* | PM10* | PM2.5 | $SO_2$ | **$NO_x$ | VOC | CO |
| Emission Factor in lb/MMCF | 1.9 | 7.6 | 7.6 | 0.6 | 100 | 5.5 | 84.0 |
| **Potential to Emit in tons/yr** | **0.13** | **0.52** | **0.52** | **0.04** | **6.83** | **0.38** | **5.74** |

*PM and PM10 emission factors are condensable and filterable PM10 combined.
**Emission Factors for $NO_x$: Uncontrolled = 100.

Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2,
and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03
(AP-42 Supplement D 3/98)

**Methodology**
All Emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Above calcultions are from pemit number T 089-29424-00345, issued on February 25, 2011.

**HAPS Calculations**

| | HAPs - Organics | | | | | |
|---|---|---|---|---|---|---|
| | Benzene | Dichlorobenzene | Formaldehyde | Hexane | Toluene | **Total - Organics** |
| Emission Factor in lb/MMcf | 2.10E-03 | 1.20E-03 | 7.50E-02 | 1.80E+00 | 3.40E-03 | |
| Potential Emission in tons/yr | 1.4E-04 | 8.2E-05 | 5.1E-03 | 0.12 | 2.3E-04 | **0.13** |

| | HAPs - Metals | | | | | |
|---|---|---|---|---|---|---|
| | Lead | Cadmium | Chromium | Manganese | Nickel | **Total - Metals** |
| Emission Factor in lb/MMcf | 5.00E-04 | 1.10E-03 | 1.40E-03 | 3.80E-04 | 2.10E-03 | |
| Potential Emission in tons/yr | 3.4E-05 | 7.5E-05 | 9.6E-05 | 2.6E-05 | 1.4E-04 | **3.7E-04** |
| | | | | | **Total HAPs** | **0.13** |
| | | | | | **Worst HAP** | **0.12** |

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Greenhouse Gas Calculations**

| | Greenhouse Gas* | | |
|---|---|---|---|
| | CO2 | CH4 | N2O |
| Emission Factor in lb/MMcf | 120,000 | 2.3 | 2.2 |
| Potential Emission in tons/yr | 8,199 | 0 | 0 |
| Summed Potential Emissions in tons/yr | 8,200 | | |
| CO2e Total in tons/yr | 8,248 | | |

**Methodology**
The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.
Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
*CO2e (tons/yr) based on 11/29/2013 federal GWPs= CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O Potential Emission ton/yr x N2O GWP (298).

**Appendix A: Emission Calculations**
**VOC and HAP Emissions**
**From the Distillation Unit**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Process Description:**

Max. Throughput Rate: 1.0 ton/hr
VOC Emission Factor: 0.52 lbs/ton (This is provided by the manufacturer)
Control Equipment: Carbon Adsorption System for VOC/HAP Control
Control Efficiency: 98.0%

**Potential to Emit VOC/HAP before Control:**

Assume all the VOC emissions are equal to HAP emissions because the HAP contents in the received waste very greatly.

**PTE of VOC/HAP before Control** = 1 tons/hr x 0.52 lbs/ton x 8760 hr/yr x 1 ton/2000 lbs = **2.28 tons/yr**

**Potential to Emit VOC/HAP after Control:**

**PTE of VOC/HAP after Control** = 1 tons/hr x 0.52 lbs/ton x 8760 hr/yr x 1 ton/2000 lbs x (1- 98%) = **0.05 tons/yr**

Note: Above calcultions are from pemit number T 089-29424-00345, issued on February 25, 2011.

| Limited | lb/hr | ton/yr |
|---|---|---|
| Distillation Unit | 0.014 | 0.06 |

**Appendix A: Emission Calculations**
**Tank VOC Emissions**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| Emission Unit | Tank Volume | Working Loss | Breathing Loss | VOC Total Emissions | | | |
|---|---|---|---|---|---|---|---|
| | Gallons | lbs/year | lbs/year | lbs/year | TPY | lbs/day | lbs/hr |
| | | | | | | | |
| 52 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 53 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 54 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 55 | 20,000 | 646.9 | 206.2 | 853.1 | 0.43 | 2.34 | 0.10 |
| | | **Tanks 52-55** | **Total** | 1086.5 | **0.5** | | |

| Emission Unit | Tank Volume | Working Loss | Breathing Loss | VOC Total Emissions | | | |
|---|---|---|---|---|---|---|---|
| | Gallons | lbs/year | lbs/year | lbs/year | TPY | lbs/day | lbs/hr |
| 57 | 20,000 | 646.9 | 206.2 | 853.1 | 0.43 | 2.34 | 0.10 |
| 58 | 20,000 | 646.9 | 206.2 | 853.1 | 0.43 | 2.34 | 0.10 |
| 59 | 6,000 | 360.9 | 0.0 | 360.9 | 0.18 | 0.99 | 0.04 |
| 60 | 6,000 | 360.9 | 0.0 | 360.9 | 0.18 | 0.99 | 0.04 |
| 61 | 20,000 | 646.9 | 206.2 | 853.1 | 0.43 | 2.34 | 0.10 |
| 62 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 63 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 64 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 65 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 66 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| 67 | 12,000 | 77.8 | 0.0 | 77.8 | 0.04 | 0.21 | 0.01 |
| | | **Tanks 57-67** | **Total** | 3747.9 | **1.9** | | |

Note: Storage tank emissions are estimated using USEPA's Tanks 4.0.9D software program and provided by the source.

**Appendix A: Emissions Calculations**
**VOC and HAP**
**Pot Still**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Tradebe Pot Still Minor Source Modification Emissions Calculations**

| 2013 Pot Still Data | |
|---|---|
| Max Capacity (gal/hr) | 70 |
| Hrs Operation (hr/yr) | 6607 |
| Throughput (gal/yr) | 326032 |
| VOC Adsorption Rate (lb VOC/lb carbon) | 0.25 |
| Control Efficiency (99%) | 99.0% |
| Carbon Used (lbs) | 10800 |
| Total Changeouts per year | 54 |
| Carbon/Changeout (lbs) | 200 |
| Actual Gallons/Hour | 49.35 |
| Carbon Used/gal (lbs/gal) | 0.033 |

| Proposed Modified Unit | |
|---|---|
| Modified Capacity (gal/hr) | 115 |
| Max Hrs Operation (hr/yr) | 8760 |
| Max Throughput (gal/yr) | 1007400 |
| VOC Adsorption Rate (lb VOC/lb carbon) | 0.25 |
| Control Efficiency (98%) | 98.0% |
| Est Max Carbon Used (lbs) | 33370.7 |
| Est Max Changeouts per year | 166.9 |
| Carbon/Changeout (lbs) | 200 |

| | 2013 Actual Data | Potential VOC Emissions (Modified Unit) | Potential HAP Emissions (Modified Unit)* |
|---|---|---|---|
| Uncontrolled VOC Emissions (lbs/yr) | 2700.0 | 8342.7 | 8342.7 |
| Controlled VOC Emissions (lbs/yr) | 27.0 | 166.9 | 166.9 |
| Uncontrolled VOC Emissions (lbs/gal) | 0.0083 | 0.0083 | 0.0083 |
| Controlled VOC Emissions (lbs/gal) | 8.28E-05 | 1.66E-04 | 1.66E-04 |

| | 2013 Actual Data | Potential VOC Emissions (Modified Unit) | Potential HAP Emissions (Modified Unit)* |
|---|---|---|---|
| Total Uncontrolled VOC Emissions (tons/yr) | 1.35 | 4.17 | 4.17 |
| Total Controlled VOC Emissions (tons/yr) | 0.01 | 0.08 | 0.08 |

*Based on conservative assumption, HAPs emissions are assumed equal to VOC emissions.
Potential to emit was back calculated from 2013 carbon usage.
Uncontrolled VOC Emissions (lbs/yr) = Total Changeouts/year x lbs carbon/Changeout x VOC Adsorption Rate (lb VOC/lb carbon)
Controlled VOC Emissions (lbs/yr) = Uncontrolled VOC Emissions (lbs/yr) * (1 - Control Efficiency)
Uncontrolled VOC Emissions (lbs/gal) = Uncontrolled VOC Emissions (lbs/yr) / Throughput (gal/yr)
Controlled VOC Emissions (lbs/gal) = Uncontrolled VOC Emissions (lbs/gal) * (1- Control Efficiency)
Total Uncontrolled VOC Emissions (tons/yr) = Total Uncontrolled VOC PTE (lbs/yr) / 2000 lbs/ton
Total Controlled VOC Emissions (tons/yr) = Total Uncontrolled VOC PTE (tons/yr) * (1- Control Efficiency)

**Appendix A: Emission Calculations**
**Natural Gas Combustion (MMBtu/hr < 100)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Thin Film Evaporator**

| Heat Input Capacity MMBtu/hr | Potential Throughput MMCF/yr |
|---|---|
| 2.4 | 21.0 |

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| Combustion | PM* | PM10* | PM2.5 | $SO_2$ | **$NO_x$ | VOC | CO |
| Emission Factor in lb/MMCF | 1.9 | 7.6 | 7.6 | 0.6 | 100 | 5.5 | 84.0 |
| **Potential to Emit in tons/yr** | **0.02** | **0.08** | **0.08** | **0.01** | **1.05** | **0.06** | **0.88** |
| | | | | | **Additional VOC** | **0.03** | |
| | | | | | **Total VOC** | **0.09** | |

*PM and PM10 emission factors are condensable and filterable PM10 combined.
**Emission Factors for $NO_x$: Uncontrolled = 100.
Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (AP-42 Supplement D 3/98)

**Methodology**
All Emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

**HAPS Calculations**

| | HAPs - Organics | | | | | |
|---|---|---|---|---|---|---|
| | Benzene | Dichlorobenzene | Formaldehyde | Hexane | Toluene | **Total - Organics** |
| Emission Factor in lb/MMcf | 2.10E-03 | 1.20E-03 | 7.50E-02 | 1.80E+00 | 3.40E-03 | |
| Potential Emission in tons/yr | 2.2E-05 | 1.3E-05 | 7.9E-04 | 0.02 | 3.6E-05 | **0.02** |

| | HAPs - Metals | | | | | |
|---|---|---|---|---|---|---|
| | Lead | Cadmium | Chromium | Manganese | Nickel | **Total - Metals** |
| Emission Factor in lb/MMcf | 5.00E-04 | 1.10E-03 | 1.40E-03 | 3.80E-04 | 2.10E-03 | |
| Potential Emission in tons/yr | 5.3E-06 | 1.2E-05 | 1.5E-05 | 4.0E-06 | 2.2E-05 | **5.8E-05** |
| | | | | | **Total HAPs** | **0.02** |
| | | | | | **Worst HAP** | **0.02** |

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Greenhouse Gas Calculations**

| | Greenhouse Gas* | | |
|---|---|---|---|
| | CO2 | CH4 | N2O |
| Emission Factor in lb/MMcf | 120,000 | 2.3 | 2.2 |
| Potential Emission in tons/yr | 1,261 | 0.02 | 0.02 |
| Summed Potential Emissions in tons/yr | 1,261 | | |
| CO2e Total in tons/yr | 1,269 | | |

**Methodology**
The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.
Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
*CO2e (tons/yr) based on 11/29/2013 federal GWPs= CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O Potential Emission ton/yr x N2O GWP (298).

**Appendix A: Emission Calculations**
**Natural Gas Combustion (MMBtu/hr < 100)**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Hot Oil Heater**

| Heat Input Capacity MMBtu/hr | Potential Throughput MMCF/yr |
|---|---|
| 2.5 | 21.9 |

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| | PM* | PM10* | PM2.5 | $SO_2$ | **$NO_x$ | VOC | CO |
| Emission Factor in lb/MMCF | 1.9 | 7.6 | 7.6 | 0.6 | 100 | 5.5 | 84.0 |
| **Potential to Emit in tons/yr** | **0.02** | **0.08** | **0.08** | **0.01** | **1.10** | **0.06** | **0.92** |

*PM and PM10 emission factors are condensable and filterable PM10 combined.
**Emission Factors for $NO_x$: Uncontrolled = 100.
Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (AP-42 Supplement D 3/98)

**Methodology**
All Emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

**HAPS Calculations**

| | HAPs - Organics | | | | | |
|---|---|---|---|---|---|---|
| | Benzene | Dichlorobenzene | Formaldehyde | Hexane | Toluene | **Total - Organics** |
| Emission Factor in lb/MMcf | 2.10E-03 | 1.20E-03 | 7.50E-02 | 1.80E+00 | 3.40E-03 | |
| Potential Emission in tons/yr | 2.3E-05 | 1.3E-05 | 8.2E-04 | 0.02 | 3.7E-05 | **0.02** |

| | HAPs - Metals | | | | | |
|---|---|---|---|---|---|---|
| | Lead | Cadmium | Chromium | Manganese | Nickel | **Total - Metals** |
| Emission Factor in lb/MMcf | 5.00E-04 | 1.10E-03 | 1.40E-03 | 3.80E-04 | 2.10E-03 | |
| Potential Emission in tons/yr | 5.5E-06 | 1.2E-05 | 1.5E-05 | 4.2E-06 | 2.3E-05 | **6.0E-05** |
| | | | | | **Total HAPs** | **0.02** |
| | | | | | **Worst HAP** | **0.02** |

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Greenhouse Gas Calculations**

| | Greenhouse Gas* | | |
|---|---|---|---|
| | CO2 | CH4 | N2O |
| Emission Factor in lb/MMcf | 120,000 | 2.3 | 2.2 |
| Potential Emission in tons/yr | 1,314 | 0.03 | 0.02 |
| Summed Potential Emissions in tons/yr | 1,314 | | |
| CO2e Total in tons/yr | 1,322 | | |

**Methodology**
The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.
Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
*CO2e (tons/yr) based on 11/29/2013 federal GWPs= CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O Potential Emission ton/yr x N2O GWP (298).

**Appendix A: Emissions Calculations**
**Fugitive PM**
**From Paved/Unpaved Roads and Storage Piles**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

**Truck Dumping**
E = k(0.0032) * (U/5)^1.3 / (M/2)^1.4

E = Emission Factor (lbs/ton)
k = 0.35 particle size multilplier for PM-10
0.74 particle size multilplier for PM
U = 10.3 mean wind speed (mph)
M = 5 material moisture content (fraction)

PM Emission Factor:
E = 0.00168 lb/ton

PM-10 Emission Factor:
E = (0.35)(0.0032) * (12.7/5)^1.3 / (10%/2)^1.4
E = 0.00079 lb/ton

Annual potential amount of dry material delivered by truck = 1980 tpy
Potential PM Emissions (tons/year) = Emission factor (lb/ton) * Gypsum delivered (tpy) / 2000 (lbs/ton)
Potential PM Emissions (tons/year) = **0.0017 tpy**
Potential PM-10 Emissions (tons/year) = Emission factor (lb/ton) * Gypsum delivered (tpy) / 2000 (lbs/ton)
Potential PM-10 Emissions (tons/year) = **0.0008 tpy**

**Paved Roads**
Maximum Vehicular Speed: 5 mph
Average Distance of Haul: 0.15 miles

| Vehicle Type | No. of One Way Trips per Hour | Weight |
|---|---|---|
| Tanker | 0.29 | 37.5 |
| Vans | 0.25 | 35 |
| Roll Off Boxes | 0.08 | 35 |
| Dump Truck | 0.04 | 37.5 |
| total | 0.66 | |

Weighted Average Gross Weight: 36.25 tons
Calculations:

E = k(sL/2)^0.65 * (W/3)^1.5
E = Emission factor (lbs/vehicle miles traveled(VMT))
k = 0.016 particle size multiplier for PM-10
0.082 particle size multiplier for PM
sL = 3 road surface silt content (g/m^2)
W = 36.25 weighted average vehicle weight (tons) (calculate from table above)

source: AP-42, chapter 13.2.1, p. 13.2.1-6.
VMT= 867.24 (miles/yr)

PM
E = 4.48 lbs/VMT
Potential PM Emissions (ton/yr) = Emission factor (lbs/VMT) * VMT / 2000 (lbs/ton)
Potential PM Emissions (ton/yr) = **1.94 tpy**

PM-10
E = 0.87 lbs/VMT
Potential PM-10 Emissions (ton/yr) = Emission factor (lbs/VMT) * VMT / 2000 (lbs/ton)
Potential PM-10 Emissions (ton/yr) = **0.38 tpy**

**Appendix A: Emission Calculations**
**Large Reciprocating Internal Combustion Engines - Diesel Fuel**
**Output Rating (>600 HP)**
**Maximum Input Rate (>4.2 MMBtu/hr)**
**Diesel-Fired Emergency Generator**

**Company Name:** Tradebe Treatment and Recycling LLC
**Source Address:** 4343 Kennedy Avenue, East Chicago, IN 46312
**Permit Number:** SSM 089-34432-00345 and SPM 089-34503-00345
**Reviewer:** Heath Hartley

| | |
|---|---|
| Output Horsepower Rating (hp) | 896.0 |
| Maximum Hours Operated per Year | 500 |
| Potential Throughput (hp-hr/yr) | 448,000 |
| Sulfur Content (S) of Fuel (% by weight) | 0.500 |

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| | PM* | PM10* | direct PM2.5* | SO2 | NOx | VOC | CO |
| Emission Factor in lb/hp-hr | 7.00E-04 | 4.01E-04 | 4.01E-04 | 4.05E-03 *(.00809S)* | 2.40E-02 **see below | 7.05E-04 | 5.50E-03 |
| Potential Emission in tons/yr | 0.16 | 0.09 | 0.09 | 0.91 | 5.38 | 0.16 | 1.23 |

*PM10 emission factor in lb/hp-hr was calculated using the emission factor in lb/MMBtu and a brake specific fuel consumption of 7,000 Btu / hp-hr (AP-42 Table 3.3-1).
**NOx emission factor: uncontrolled = 0.024 lb/hp-hr, controlled by ignition timing retard = 0.013 lb/hp-hr

**Hazardous Air Pollutants (HAPs)**

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| | Benzene | Toluene | Xylene | Formaldehyde | Acetaldehyde | Acrolein | Total PAH HAPs*** |
| Emission Factor in lb/hp-hr**** | 5.43E-06 | 1.97E-06 | 1.35E-06 | 5.52E-07 | 1.76E-07 | 5.52E-08 | 1.48E-06 |
| Potential Emission in tons/yr | 1.22E-03 | 4.41E-04 | 3.03E-04 | 1.24E-04 | 3.95E-05 | 1.24E-05 | 3.32E-04 |

***PAH = Polyaromatic Hydrocarbon (PAHs are considered HAPs, since they are considered Polycyclic Organic Matter)
****Emission factors in lb/hp-hr were calculated using emission factors in lb/MMBtu and a brake specific fuel consumption of 7,000 Btu / hp-hr (AP-42 Table 3.3-1).

**Methodology**
Emission Factors are from AP 42 (Supplement B 10/96) Tables 3.4-1 , 3.4-2, 3.4-3, and 3.4-4.
Potential Throughput (hp-hr/yr) = [Output Horsepower Rating (hp)] * [Maximum Hours Operated per Year]
Potential Emission (tons/yr) = [Potential Throughput (hp-hr/yr)] * [Emission Factor (lb/hp-hr)] / [2,000 lb/ton]

| | |
|---|---|
| **Potential Emission of Total HAPs (tons/yr)** | **2.47E-03** |

**Green House Gas Emissions (GHG)**

| | Pollutant | | |
|---|---|---|---|
| | CO2 | CH4 | N2O |
| Emission Factor in lb/hp-hr | 1.16E+00 | 6.35E-05 | 9.30E-06 |
| Potential Emission in tons/yr | 260 | 1.42E-02 | 2.08E-03 |

| | |
|---|---|
| **Summed Potential Emissions in tons/yr** | **260** |
| **CO2e Total in tons/yr** | **261** |

**Methodology**
Emission Factors are from AP 42 (Supplement B 10/96) Tables 3.4-1 , 3.4-2, 3.4-3, and 3.4-4.
CH4 and N2O Emission Factor from 40 CFR 98 Subpart C Table C-2.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Potential Throughput (hp-hr/yr) = [Output Horsepower Rating (hp)] * [Maximum Hours Operated per Year]
Potential Emission (tons/yr) = [Potential Throughput (hp-hr/yr)] * [Emission Factor (lb/hp-hr)] / [2,000 lb/ton]
CO2e (tons/yr) = CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O

# Indiana Department of Environmental Management
# Office of Air Quality

## Appendix B – BACT Analyses
## Technical Support Document (TSD)
## Best Available Control Technology (BACT) Determination

**Source Background and Description**

| | |
|---|---|
| Source Name: | Tradebe Treatment and Recycling, LLC |
| Source Location: | 4343 Kennedy Avenue, East Chicago, IN 46312 |
| County: | Lake |
| SIC Code: | 4953 (Refuse Systems) |
| Operation Permit No.: | T 089-29424-00345 |
| Operation Permit Issuance Date: | February 25, 2011 |
| Significant Source Modification No.: | 089-34432-00345 |
| Significant Permit Modification No.: | 089-34503-00345 |
| Permit Reviewer: | Heath Hartley |

On April 15, 2014, the Office of Air Quality (OAQ) received an application from Tradebe Treatment and Recycling, LLC related to the construction and operation of new emission units at an existing waste management, recycling and fuel processing source. The Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) has performed the below Best Available Control Technology (BACT) review for the following new emission unit:

(m) One (1) Solids Distillation System, identified as SDS II, approved in 2015 for construction, with a maximum throughput rate of 5.0 tons of waste per hour, consisting of:

(1) One (1) SDS Shredder and feed conveyor, identified as SDS Shredder II, with a processing capacity of 5.0 tons per hour, vented to a carbon adsorption system for VOC control (C37), exhausting to stack SDS II 01.

(2) One (1) Anaerobic Thermal Desorption Unit, identified as ATDU II, with a maximum capacity of 32 MMBtu/hr, using natural gas, no control, exhausting to stack SDS II 02.

Under 40 CFR 63, Subpart DDDDD, the ATDU II is considered an affected facility.

(3) One (1) Vapor Recovery Unit, identified as VRU II, using a John Zink open flare (FL1) for control of non-condensable gases and a carbon adsorption system for backup VOC control (C38), exhausting to stack SDS 07.

(4) One (1) solids handling system, identified as SHS, vented to a baghouse for particulate control (BH3), with VOC/HAP emissions, exhausting to stack SDS II 04.

(5) One (1) Oil-Water Separator, identified as F-01, with a maximum of 22,000 gal, and one interceptor tank identified as F-02 with a maximum of 3,700 gal, associated with the VRU II, venting to a carbon adsorption system for VOC control (C39), exhausting to stack SDS II 03.

(6) Four (4) tanks, identified as Tank 81 through 84, each with a maximum of 12,000 gal, used to store liquid products venting to a common carbon adsorption system for VOC control (C40), exhausting to stack SDS II 08.

(7) One (1) tank, identified as Tank 85 used to store process water, with a maximum of 22,000 gal, venting to a carbon adsorption system for VOC control (C41), exhausting to stack SDS II 07.

(8) One (1) tank, identified as Tank 86 used to store process water/light sludge water, with a maximum of 22,000 gal, venting to a carbon adsorption system for VOC control (C42), exhausting to stack SDS II 06.

(9) One (1) tank, identified as Tank 87 used to store oil/solvent, with a maximum of 22,000 gal, venting to a carbon adsorption system for VOC control (C43), exhausting to stack SDS II 06.

(10) One (1) insignificant cooling tower, identified as SDS II 13.

Under 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.

The Permittee provided additional information on July 8, 2014, regarding potential emissions from the existing Solids Distillation System (SDS). Based on the information provided, the total combined potential VOC emissions from the Solids Distillation System (SDS), Distillation Unit, Tanks 52-55, and the Pot Still is greater than twenty-five (25) tons per year; therefore a Best Available Control Technology (BACT) review is also included for the following existing emission units:

(d) One (1) Solids Distillation System (SDS), constructed in 2004, with a maximum throughput rate of 4 tons of waste per hour, consisting of:

(1) One (1) SDS Shredder, approved for modification in 2013, using a variable speed fan and carbon adsorption system for VOC control (C14), exhausting to stacks SDS 01(a) and (b).

(2) One (1) Anaerobic Thermal Desorption System enclosed feed conveyor under nitrogen blanketing, and enclosed in a chilled jacket, using a carbon adsorption system for VOC control (C15), exhausting to SDS 03.

(3) One (1) Anaerobic Thermal Desorption Unit, identified as ATDU, with one (1) 15.6 MMBtu/hr natural gas fired heater, exhausting to stack SDS 02.

Under 40 CFR 63, Subpart DDDDD, the ATDU is considered an affected facility.

(4) One (1) Oil-Water Separator, using a carbon adsorption system for VOC control (C16), exhausting to stack SDS 03.

(5) One (1) water tank, using a carbon adsorption system for VOC control (C17), exhausting to stack SDS 08.

(6) One (1) Vapor Recovery Unit (VRU), using an enclosed John Zink flare (FL1) with a demister (and a carbon adsorption system as backup (C18)) for VOC control, exhausting to stack SDS 07.

(7) One (1) solids shaker and conveyor system, using two (2) baghouses for particulate control (BH1-BH2), exhausting to stacks SDS 04 and SDS 09.

Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.

(e) One (1) Distillation Unit, constructed in 2004, with a maximum throughput rate of 1.0 tons of liquid waste per hour, controlled by a carbon adsorption system (C19), and exhausting to stack SDS 05.

Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.

(f) One (1) condensed liquid tank, identified as Tank 55, constructed in 2004, with a nominal capacity of 20,000 gallons, used to collect oil from the oil-water separator, controlled by a carbon Adsorption system (C20), and exhausting to stack SDS 08.

Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.

(g) Three (3) RCRA hazardous waste tanks, identified as Tanks 52 through 54, constructed in 2004, each with a nominal capacity of 12,000 gallons, controlled by a carbon adsorption system (C21), and exhausting to stack SDS 08.

Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V and 40 CFR 61, Subpart FF, this unit is considered an affected facility.

(i) One (1) Pot Still, constructed in 2007 and modified in 2015, with a maximum throughput rate of 115 gallons of liquid waste per hour, controlled by a carbon adsorption system (C33), and exhausting to stack SDS 10.

Under 40 CFR 61, Subpart J, 40 CFR 61, Subpart V, 40 CFR 61, Subpart FF and 40 CFR 63, Subpart FFFF, this unit is considered an affected facility.

## Emission Calculations

See Appendix A – Emission Calculations – of this TSD for detailed Potential to Emit (PTE) calculations.

## Requirement for VOC BACT

Pursuant to 326 IAC 8-1-6 (New Facilities; General Reduction Requirements), Best Available Control Technology (BACT) is required for all facilities constructed after January 1, 1980 that have potential VOC emissions of equal to or greater than twenty-five (25) tons per year and are not regulated by other rules in 326 IAC 8.

The proposed new Solids Distillation System (SDS II) has potential VOC emissions greater than twenty-five (25) tons per year. In addition, the Permittee provided additional information on July 8, 2014, regarding potential emissions from the existing Solids Distillation System (SDS). Based on the information provided, the total combined potential VOC emissions from the Solids Distillation System (SDS), Distillation Unit, Tanks 52-55, and the Pot Still is greater than twenty-five (25) tons per year.

Therefore, the Permittee is required to control VOC emissions from the emission units associated with the SDS and SDS II systems, the Distillation Unit, Tanks 52-55, and the Pot Still pursuant to the provisions of 326 IAC 8-1-6 (BACT).

## Summary of the Best Available Control Technology (BACT) Process

BACT is a mass emission limitation based on the maximum degree of pollution reduction of emissions, which is achievable on a case-by-case basis. BACT analysis takes into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, work practices, and operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to significant degradation of air quality, thereby protecting public health and the environment.

Federal guidance on BACT requires an evaluation that follows a “top down” process, consisting of five (5) steps. The Office of Air Quality (OAQ) makes BACT determinations by following the five (5) steps as outlined below.

*Step 1: Identify Potential Control Technologies*

The first step is to identify potentially "available" control options for each emission unit and for each pollutant under review. Available options should consist of a comprehensive list of those technologies with a potentially practical application to the emissions unit in question. The list should include lowest achievable emission rate (LAER) technologies, innovative technologies, and controls applied to similar source categories. Available control options may also include lower-emitting materials/processes and work practices, and operational limitations. Although innovative technologies may be included as a potentially available control option, there is no requirement in the State or Federal regulations to require innovative control to be evaluated in Step 1 or used as BACT.

*Step 2: Eliminate Technically Infeasible Options*

The second step is to eliminate technically infeasible options from further consideration. To be considered feasible, a technology must be both available and applicable. It is important in this step that any presentation of a technical argument for eliminating a technology from further consideration be clearly documented based on physical, chemical, engineering, and source-specific factors related to safe and successful use of the controls. Innovative control means a control that has not been demonstrated in a commercial application on similar units. Innovative control technology is projected to have equivalent or better emission reductions to the best available control technology. The source has not requested to use an innovative control technology; therefore, the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered available when there are sufficient data indicating that the technology results in a reduction in emissions of regulated pollutants.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The third step is to rank the technologies not eliminated in Step 2 in order of descending control effectiveness for each pollutant of concern. The ranked alternatives are reviewed in terms of environmental, energy, and economic impacts specific to the proposed modification. If the analysis determines that the evaluated alternative is not appropriate as BACT due to any of the impacts, then the next most effective is evaluated. This process is repeated until a control alternative is chosen as BACT. If the highest ranked technology is proposed as BACT, it is not necessary to perform any further technical or economic evaluation, except for the environmental analyses.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The fourth step entails an evaluation of energy, environmental, and economic impacts for determining a final level of control. If the top option is selected as BACT and there are no significant environmental impacts, then the BACT Review ends with selection of the top option as BACT. The evaluation begins with the most stringent control option and continues until a technology under consideration cannot be eliminated based on adverse energy, environmental, or economic impacts.

*Step 5: Select BACT*

The fifth and final step is to select as BACT the most effective of the remaining technologies under consideration for each pollutant of concern. For the technologies determined to be feasible, there may be several different limits that have been set as BACT for the same control technology. The permitting agency has to choose the most stringent limit as BACT unless the applicant demonstrates in a convincing manner why that limit is not feasible. The final BACT determination would be the technology with the most stringent corresponding limit that is economically feasible. BACT must, at a minimum, be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits.

The Office of Air Quality (OAQ) makes BACT determinations by following the five steps identified above.

This BACT determination is based on the following information:

(1) The BACT analysis information submitted by Tradebe Treatment and Recycling, LLC on April 15, 2014 and July 8, 2014.

(2) The U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC) database search results based on the following criteria:

(A) SIC Code 4953 (Refuse Systems)
(B) Process Type Code 29.200 (Hazardous Waste Treatment, Storage & Disposal Facilities)
(C) Process Type Code 29.300 (Waste Recycling Processes)
(D) Process Type Code 29.900 (Other Waste Processing & Disposal Processes)
(E) SIC Code 2869 (Industrial Organic Chemicals, Not Elsewhere Classified)

(3) Indiana Department of Environmental Management (IDEM) air quality permits under SIC Code 4953 (Refuse Systems) and 2869 (Industrial Organic Chemicals, Not Elsewhere Classified).

(4) EPA air pollution control training documents, guidance documents, and other reports, including, but not limited to the following:

(A) Clean Air Technology Center (CATC) Technical Bulletins (TB) and Air Pollution Technology Fact Sheets (FS). These documents are currently located on the internet at: http://www.epa.gov/ttn/catc/products.html

(B) EPA Air Pollution Control Cost Manual, Sixth Edition, EPA-452-B-02-001, January 2002, United States Environmental Protection Agency. This document is currently located on the internet at: http://www.epa.gov/ttn/catc/dir1/c_allchs.pdf

(C) Sources and Control of Volatile Organic Air Pollutants, Student Manual, Air Pollution Training Institute (APTI) Course 482, Third Edition, November 2002, United States Environmental Protection Agency. This manual is available on the internet at: http://www.4cleanair.org/APTI/482combined.pdf; and

(D) Flare Efficiency Study, EPA-600/2-83-052, United States Environmental Protection Agency, July 1983. This document is currently located on the internet at: http://www.epa.gov/ttn/chief/ap42/ch13/related/ref_01c13s05_jan1995.pdf

**Step 1 – Identify Potential Control Options**

Based on the information reviewed for this BACT determination, the following potentially available control technologies were identified for controlling VOC emissions from the emission units associated with the SDS and SDS II systems, the Distillation Unit, Tanks 52-55, and the Pot Still:

(a) Flare:

Flaring is the process of oxidizing VOC in a waste gas stream by piping the waste gas to a remote, usually elevated location and burning it in a flame using a specially designed burner tip, auxiliary fuel, and steam or air to promote mixing. Flares are generally categorized in two ways: (1) by the height of the flare tip (i.e., ground or elevated), and (2) by the method of enhancing mixing at the flare tip (i.e., steam-assisted, air-assisted, pressure-assisted, or non-assisted). Flares can be used to control almost any VOC stream, and can typically handle large fluctuations in VOC concentration, flow rate, heating value, and inert species content. Flaring is appropriate for continuous, batch, and variable flow vent stream applications, but the primary use is that of a safety device used to control a large volume of pollutant resulting from upset conditions. Flares have primarily been used in petroleum production, petroleum refineries, and chemical plants to control waste gas streams containing low molecular weight VOC with high heating values.

A properly operated flare can achieve 98+% VOC control efficiency when controlling emission streams with heat contents greater than 300 British thermal units per standard cubic foot (Btu/scf). If the waste gas stream has a heat content less than 300 Btu/scf, auxiliary fuel must be introduced in sufficient quantity to make up the difference. The VOC destruction efficiency of a flare depends upon the waste gas characteristics (density, flammability, heating value, and VOC component autoignition temperatures) and the combustion zone conditions (temperature, residence time, mixing, and available oxygen). While flares can provide efficient VOC control, other pollutants such as nitrogen oxides (NOx) and carbon monoxide (CO) are formed from the combustion process. Flares are not generally recommended for controlling gases containing halogen- or sulfur-containing compounds, because of the formation of hydrogen chloride, hydrogen fluoride gas, sulfur dioxide, and other highly corrosive acid gases.

(b) Thermal Oxidizer:

Thermal oxidation is the process of oxidizing VOC in a waste gas stream by raising the temperature above the VOC's autoignition point in the presence of oxygen for sufficient time to completely oxidize the organic contaminants to carbon dioxide and water. The residence time, temperature, flow velocity and mixing, and the oxygen concentration in the combustion chamber affect the oxidation rate and destruction efficiency. Thermal oxidizers operating costs are relatively high, since they typically require combustion of an auxiliary fuel (e.g., natural gas) to maintain combustion chamber temperature high enough to completely oxidize the contaminant gases. In general, thermal oxidizers are less efficient at treating waste gas streams with highly variable flowrates, since the variable flowrate results in varying residence times, combustion chamber temperature, and poor mixing. In addition, thermal oxidizers are also not generally cost-effective for low-concentration, high-flow organic vapor streams.

Thermal oxidizers can achieve 95-99.99+% VOC control efficiency and can be used over a wide range of organic vapor concentrations, but perform best at inlet concentrations of around 1,500-3,000 ppmv. Thermal oxidizers are typically designed to have a residence time of 0.3 to 1.0 second and combustion chamber temperatures between 1,200 and 2,000°F. In order to meet 98% or greater control or a 20 parts per million by volume (ppmv) compound exit concentration of non-halogenated organics, thermal oxidizers should typically be operated at a residence time of at least 0.75 seconds, a combustion chamber temperature of at least 1600°F, and with proper mixing. While thermal oxidation provides efficient VOC control, other pollutants such as nitrogen oxides and carbon monoxide are formed from the combustion process.

Thermal oxidizers are not generally recommended for controlling gases containing halogen- or sulfur-containing compounds, because of the formation of hydrogen chloride, hydrogen fluoride gas, sulfur dioxide, and other highly corrosive acid gases. It may be necessary to install a post-oxidation acid gas treatment system in such cases, depending on the outlet concentration. This would likely make incineration an uneconomical option. For halogenated VOC streams, a combustion temperature of 2000°F, a residence time of 1.0 second, and use of an acid gas scrubber on the outlet is recommended.

The three types of thermal oxidation systems include direct flame, recuperative, and regenerative thermal oxidizers, which are differentiated by the type of heat recovery equipment used.

(1) Direct Flame Thermal Oxidizer

A direct flame thermal oxidizer is comprised of a combustion chamber and does not include any heat recovery of exhaust air by a heat exchanger.

(2) Recuperative Thermal Oxidizer

A recuperative thermal oxidizer is comprised of the combustion chamber, a heat exchanger for preheating the untreated VOC gas stream, and, if cost-effective, a secondary energy recovery heat exchanger. In a recuperative thermal oxidizer, the

untreated VOC gas stream entering the oxidizer is preheated using the heat content of the treated gas stream exiting the oxidizer using a heat exchanger, resulting in improved oxidizer efficiency and reduced auxiliary fuel usage. Recuperative thermal oxidizers usually are more economical than direct flame thermal oxidizers because they typically recover 40 to 70% of the waste heat from the exhaust gases.

(3) Regenerative Thermal Oxidizer

A regenerative thermal oxidizer typically consists of a set of 2 or 3 packed ceramic beds that are used to recover heat from hot combustion gases that are generated during combustion of the VOC gas stream and auxiliary fuel, resulting in improved oxidizer efficiency and reduced auxiliary fuel usage. An "inlet" bed is used to pre-heat the untreated VOC gas stream, an "outlet" bed is used to recover heat from the treated gas stream, and one bed is in a purge cycle. The purge cycle is needed to prevent emission spikes each time the gas flow is redirected. The oxidizer is operated on a rotating schedule, where the gas flow through the ceramic beds is redirected periodically using a set of gas flow dampers. Once the heat energy of the "inlet" ceramic bed has been depleted, the flow through the system is redirected so that the untreated VOC gas stream entering the oxidizer is directed through the previously heated "outlet" ceramic bed. Regenerative thermal oxidizers have much higher heat recovery efficiencies than recuperative thermal oxidizers, recovering 85 to 95% of the heat from the treated gas stream, and therefore have lower auxiliary fuel requirements. However, compared to direct flame and recuperative thermal oxidizers, regenerative thermal oxidizers typically have higher capital (equipment and installation) costs, are larger and heavier, and have higher maintenance costs.

(c) Catalytic Oxidizer:

Catalytic oxidation is the process of oxidizing organic contaminants in a waste gas stream within a heated chamber containing a catalyst bed in the presence of oxygen for sufficient time to completely oxidize the organic contaminants to carbon dioxide and water. The catalyst is used to lower the activation energy of the oxidation reaction, enabling the oxidation to occur at lower reaction temperatures compared to thermal oxidizers. The residence time, temperature, flow velocity and mixing, the oxygen concentration, and type of catalyst used in the combustion chamber affect the oxidation rate and destruction efficiency. Catalytic oxidizers typically require combustion of an auxiliary fuel (e.g., natural gas) to maintain combustion chamber temperature high enough to completely oxidize the contaminant gases. Catalytic oxidizers operate at lower temperatures and require less fuel than thermal oxidizers, they have a smaller footprint, and they need little or no insulation.

The catalyst bed is usually composed of the following: (1) the substrate, typically ceramic or metal honeycombs, grids, mesh pads, or beads; (2) the carrier, a high surface area inorganic material such as alumina that is bonded to the substrate that contains a complex pore structure; and (3) the catalyst, a thin layer of material deposited onto the carrier. The most widely used catalysts for VOC oxidation are noble metals, such as platinum, palladium and rhodium or mixtures thereof. Base metal catalysts, such as oxides of chromium, cobalt, copper, manganese, titanium, and vanadium may also be used for VOC oxidation.

Similar to thermal oxidizers, catalytic oxidizers may use regenerative or recuperative heat recovery to reduce auxiliary fuel requirements, where the untreated VOC gas stream entering the catalytic oxidizer is preheated using the heat content of the treated gas stream exiting the catalytic oxidizer.

Catalytic oxidizers can achieve 90-99% VOC control efficiency, depending on the oxidizer design and waste stream characteristics. Catalytic oxidizers are typically designed to have a residence time of 0.5 seconds or less and combustion chamber temperatures between 600 and 1,200°F. Catalytic oxidation is most suited to waste gas streams with little variation in the flow rate and

type and concentration of VOC to be treated. In addition, catalytic oxidizers should not be used for waste gas streams that have a high concentration of particles, silicone, sulfur, halogen compounds, and/or heavy hydrocarbons that can cause fouling or masking of the catalyst, and for waste gas streams that contain metals such as mercury, phosphorus, arsenic, antimony, bismuth, lead, zinc, and/or tin that can cause catalyst poisoning.

(d) Carbon Adsorption Unit:

Carbon adsorption is a process where VOCs are removed from a waste gas stream when it is passed through a bed containing activated carbon particles, which have a highly porous structure with a large surface-to-volume ratio. Carbon adsorption systems usually operate in two phases: adsorption and desorption. During adsorption, the majority of the VOC molecules migrate from the gas stream to the surface of the activated carbon (through the activated carbon pores) where it is lightly held to the surface by weak intermolecular forces known as van der Waals' forces. As the activated carbon bed approaches saturation with VOC, its control efficiency drops, and the bed must be taken offline to be replaced or regenerated. Typically, two activated carbon beds are utilized on a rotating schedule, where a second bed (containing fresh or previously regenerated activated carbon) is brought online to continue controlling the VOC gas stream while the first bed is being replaced or regenerated. In regenerative systems, most VOC gases can be desorbed and removed from the activated carbon bed by heating the bed to a sufficiently high temperature, usually via steam or hot air, or by reducing the pressure within the bed to a sufficiently low value (vacuum desorption). The regenerated activated carbon can be reused and the VOCs that are removed from the bed can be reclaimed or destroyed.

Carbon adsorber size and purchase cost depend primarily on the gas stream volumetric flow rate, temperature, pressure, VOC composition, VOC mass loading, and moisture and particulate contents. The adsorptive capacity of an activated carbon bed for a VOC gas tends to increase with the VOC gas phase concentration, molecular weight, diffusivity, polarity, and boiling point. Carbon adsorption systems can be used for VOC gas concentrations from less than 10 ppm to approximately 10,000 ppm. Carbon adsorption systems (in general) are usually limited to waste gas streams with VOC compounds having a molecular weight of more than 50 and less than approximately 200 lb/lb-mole, since low molecular weight organics usually do not adsorb sufficiently and high molecular weight compounds are difficult to desorb and remove during the desorption cycle. Industrial applications of adsorption systems include control for dry cleaning, degreasing, paint spraying, solvent extraction, metal foil coating, paper coating, plastic film coating, printing, pharmaceuticals, rubber, linoleum, and transparent wrapping.

Carbon adsorption systems can achieve 95-99% VOC control efficiency. Carbon adsorption system control efficiency increases with reduced VOC gas stream temperatures. Therefore, high temperature VOC gas streams are typically cooled prior to entry into the activated carbon bed. Particulate matter and high moisture concentrations present in the gas stream compete with the VOC for pore space within the activated carbon and thereby reduce the VOC adsorptive capacity and control efficiency of the carbon adsorption systems. In addition, particulate matter and moisture can become entrained within the carbon bed, causing operating problems such as increased pressure drop across the bed.

(e) Gas Absorption (wet scrubber):

A wet scrubber is an absorption system in which a waste gas stream is interacted with a scrubbing fluid inside a contact chamber in order to strip particulate or gaseous pollutants from the waste gas stream through the processes of diffusion and dissolution. In many cases, an additive such as an acid, a base, or a VOC oxidizing agent is dissolved in the scrubbing fluid so that the dissolved gaseous pollutant chemically reacts with the scrubbing fluid to form a non-volatile or soluble product, thereby allowing additional gaseous pollutant to be absorbed by the scrubbing fluid. The four types of wet scrubber systems include packed towers, plate (or tray) columns, venturi scrubbers, and spray chambers. Gas and liquid flow through an absorber may be countercurrent, crosscurrent, or cocurrent. When used as an emission control technique, wet

scrubbers are typically used for controlling particulate, acid gases, halogen gases, and highly soluble gases such as sulfur dioxide and ammonia.

If a wet scrubber is used for VOC control, the scrubbing fluid chosen should have a high solubility for the VOC gas, a low vapor pressure, a low viscosity, and should be relatively inexpensive. Water is the most commonly used scrubbing fluid for absorbing highly water-soluble (hydrophilic) VOC compounds such as methanol, ethanol, isopropanol, butanol, acetone, and formaldehyde. Other scrubbing fluid such as mineral oils, nonvolatile hydrocarbon oils, and aqueous solutions containing surfactants or amphiphilic block copolymers may be used for absorbing water-insoluble (hydrophobic) VOC compounds. Physical absorption is typically enhanced by lower temperatures, greater scrubbing fluid contacting time and surface area, higher scrubbing fluid to VOC ratio, and higher VOC concentrations in the gas stream.

Wet scrubber systems can achieve 70-99% VOC control efficiency, depending on the VOC solubility in the scrubbing fluid, the VOC-scrubbing fluid temperature, the scrubbing fluid contacting time and surface area, the scrubbing fluid to VOC ratio, the VOC concentration in the gas stream, and whether the scrubbing fluid contains a VOC oxidizing agent. Wet scrubber absorption system control efficiency increases with reduced VOC gas stream temperatures. Therefore, high temperature VOC gas streams are typically cooled prior to entry into the wet scrubber. When used to control VOC, the spent scrubbing fluid must be regenerated, treated, or shipped offsite for proper disposal.

(f) Condensation Unit:

Condensation is the separation of VOCs from an emission stream through a phase change, by either increasing the system pressure or, more commonly, lowering the system temperature below the dew point of the VOC vapor. Three types of condensers are used for air pollution Controls: (1) conventional non-refrigeration systems (such as cold-water direct contact condensers similar to wet scrubbers and cold-water indirect heat exchangers); (2) refrigeration systems (including mechanical compression refrigeration using chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs) and Reverse Brayton Cycle refrigeration); and (3) cryogenic systems that utilize liquid nitrogen (including direct contact condensers and indirect heat exchangers).

Condensation units control VOC more efficiently when they are used for gas streams containing high concentrations of VOC and with low exhaust volumes. Condensation units are typically utilized at sources where there is a significant cost benefit to recovering the organic liquid for reuse, where the recovered organic liquids do not contain multiple organic compounds or water that require separation, and where the heat content of gas stream will not overload the refrigeration system. In addition, condensation units are typically used only on gas streams that have little or no particulate contamination, which can cause fouling within the condensation equipment and reduced heat transfer efficiency. Some industrial applications where refrigerated condensers are used include the dry cleaning industry, degreasers using VOC or halogenated solvents, transfer of volatile organic liquid or petroleum products, and vapors from storage vessels.

Cold-water (non-refrigeration) condensation systems can achieve 90-99% VOC control efficiency, depending on the vapor pressures of the specific compounds. Condensation units using mechanical compression refrigeration (using CFC or HFC) can achieve 90+% VOC control efficiency, condensation units using Reverse Brayton Cycle refrigeration can achieve 98% VOC control efficiency, and condensation units using cryogenic (liquid nitrogen) cooling can achieve 99+% VOC control efficiency.

(g) Hours of Operation Limitation

A limit in the hours of operation for the emission unit may be used. Limiting the hours of operation for an emission unit will not destroy VOCs; however it will minimize the amount of VOC emissions produced.

(h) Throughput Limitation

A limit of the material throughput for the emission unit may be used. Limiting the material throughput for an emission unit will not destroy VOCs; however it will minimize the amount of VOC emissions produced.

***Review of U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC) Database***

The U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC) database was reviewed to identify control requirements and limitations for facilities that are similar to the Vapor Recovery Unit for a Solids Distillation System at this source. The RBLC search did not identify any facilities similar to the Vapor Recovery Unit for a Solids Distillation System at this source. The RBLC search only identified landfills, ethanol plants, soybean processing, etc. These facilities typically only control one primary type of chemical (e.g., methane, ethanol, methanol, hexane). However, the operation at this source will process organic gases/vapors from more than 100 different organic chemicals, each with different physical/chemical properties. Therefore, these sources were not considered as part of this BACT.

***BACT Application and IDEM Air Quality Permits***

The review of Indiana Department of Environmental Management (IDEM) air quality permits for facilities operating under SIC Codes 4953 (Refuse Systems) and 2869 (Industrial Organic Chemicals, Not Elsewhere Classified) identified one source that performs waste management/chemical recycling (see Table 1 below for Reclaimed Energy) that could be considered similar to the Vapor Recovery Unit for a Solids Distillation System at this source. In addition, Table 1 below also contains BACT determinations for two (2) landfills that Tradebe Treatment and Recycling, LLC, cited in their BACT application.

**Table 1. Air Quality Permits Search Determinations**

| Facility Information | Permit # (Issuance Date) | Process Description | Pollutant and Requirements | Basis |
|---|---|---|---|---|
| Tradebe Treatment and Recycling, LLC: East Chicago, IN (waste management, recycling and fuel processing source) | 089-34432-00345 (TBD) | SDS VRU and SDS VRU II | VOC: VRU and VRU II controlled by flare at 98% control, with carbon absorption at 98% as backup.<br><br>SDS VRU VOC (after control) < 23.4 tons/yr.<br>SDS II VOC (after control) < 95.6 tons/yr. | Proposed State BACT |
| Tradebe Treatment and Recycling, LLC: East Chicago, IN (waste management, recycling and fuel processing source) | 089-34432-00345 (TBD) | SDS Shredder/ SDS Shredder II, Anaerobic Thermal Desorption System enclosed feed conveyor, Oil-Water Separator, Tanks 52-55, 81-87, F-01, F-02, Distillation Unit and Pot Still | VOC: carbon absorption at 98% | Proposed State BACT |
| Rumpke Sanitary Landfill - Cincinnati, OH (Landfill) | P0112732 (9/24/13) OH-0358 | Landfill gas recovery plant | CO: 123.44 lb/hr<br>NOx: 26.0 lb/hr<br>PM10: 7.3 lb/hr<br>Dichlorodifluoromethane: 0.37 ton/yr | State BACT |
| Rumpke Sanitary Landfill - Georgetown, OH (Landfill) | 07-00574 (12/23/08) OH-0330 | landfill | CO: 37.02 ton/yr<br>PM10: 0.08 ton/yr | PSD BACT |
| | | Candlestick flare | CO: 22.5 lb/hr<br>NOx: 1.2 lb/hr<br>PM10: 0.51 lb/hr | |
| | | Enclosed Combustors | CO: 79.9 lb/hr<br>NOx: 21.78 lb/hr<br>PM10: 6.1 lb/hr | |
| Reclaimed Energy (stationary waste management operation – including chemical recycling) | 041-6719-00015 (6/1/01) | Vacuum distillation unit, fractionation columns, vacuum pump, pot still 1, thin film evaporators No. 1 or 2 | VOC < 58.9 tons/yr and shall operate catalytic thermal oxidizer. | State BACT |

**Step 2 – Eliminate Technically Infeasible Control Options**

The technical feasibility of the VOC control options for each of the emission units associated with the SDS and SDS II systems, Tanks 52-55, the Distillation Unit, and the Pot Still are summarized Table 2 below:

**Table 2. Technically Feasibility of Control Options**

| Control Device | Emission Unit | | | | | | |
|---|---|---|---|---|---|---|---|
| | SDS Shredder/ SDS Shredder II | ATDU/ ATDU II | VRU/ VRU II | Oil-Water Separator | Water Tank, Tanks 52-55, 81-87, F-01, F-02 | Distillation Unit | Pot Still |
| | Technically Feasible? (Yes or No) | | | | | | |
| Flare | Yes | No* | Yes | Yes | Yes | Yes | Yes |
| Regenerative Thermal Oxidizer (RTO) | Yes | No* | Yes | Yes | Yes | Yes | Yes |
| Recuperative Thermal Oxidizer | Yes | No* | Yes | Yes | Yes | Yes | Yes |
| Catalytic Oxidizer | Yes | No* | Yes | Yes | Yes | Yes | Yes |
| Carbon Adsorbers | Yes | No* | Yes | Yes | Yes | Yes | Yes |
| Gas Absorbers (wet scrubber): | Yes | No* | Yes | Yes | Yes | Yes | Yes |
| Condensation Unit | Yes | No* | No** | No** | No** | No** | No** |
| Hours of Operation Limit | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Throughput Limit | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Emissions from ATDU/ATDU II are from natural gas combustion only in the process heaters. PTE of VOC from the ATDU is only 0.38 tons/year and only 0.76 tons/year from the ATDU II. It is not practical or cost effective to use an add-on control device to control this minimal amount of VOC, since additional capital and operating costs would be incurred.

**The use of a condensation unit is not feasible to control the VOC emissions from these units, because the condensable organic compounds have already been removed from the gas stream. The use of a condensation unit will not be considered as BACT for this operation.

**Step 3 – Rank Remaining Control Options by Control Effectiveness**

The remaining technically feasible options for controlling VOC emissions from the vapor recovery units, SDS VRU and SDS VRU II, are ranked in order of control efficiency in Table 3 below:

**Table 3. Control Effectiveness for Technically Feasible Control Options: SDS VRU and SDS VRU II**

| Control Technology | Control Efficiency (%) |
|---|---|
| Flare | 98.0% |
| Regenerative Thermal Oxidizer (RTO) | 98.0% |
| Recuperative Thermal Incineration | 98.0% |
| Catalytic Incinerators | 98.0% |
| Carbon Adsorbers | 98.0% |
| Gas Absorption | 98.0% |
| Hours of Operation Limit | None* |
| Throughput Limit | None* |

*This limit would not destroy VOC emissions, but would only reduce the production of VOC emissions. IDEM OAQ has determined that limiting hours of operation and limiting throughput can be considered equivalent control, since they both would have the same effect of limiting VOC emissions.

The remaining technically feasible options for controlling VOC emissions from the SDS Shredder/SDS Shredder II, Oil-Water Separator, Tanks 52-55, 81-87, F-01, F-02, Distillation Unit, and Pot Still are ranked in order of control efficiency in Table 4 below:

**Table 4. Control Effectiveness for Technically Feasible Control Options: SDS Shredder/SDS Shredder II, Oil-Water Separator, Tanks 52-55, 81-87, F-01, F-02, Distillation Unit, and Pot Still**

| Control Technology | Control Efficiency (%) |
|---|---|
| Regenerative Thermal Oxidizer (RTO) | 98.0% |
| Recuperative Thermal Incineration | 98.0% |
| Catalytic Incinerators | 98.0% |
| Carbon Adsorbers | 98.0% |
| Gas Absorption | 98.0% |
| Condensation Unit (SDS Shredder/SDS Shredder II only) | 98.0% |
| Hours of Operation Limit | None* |
| Throughput Limit | None* |

*This limit would not destroy VOC emissions, but would only reduce the production of VOC emissions. IDEM OAQ has determined that limiting hours of operation and limiting throughput can be considered equivalent control, since they both would have the same effect of limiting VOC emissions.

IDEM is aware that the above control technologies may be able to periodically achieve control efficiencies that exceed 98% under certain operating conditions. However, BACT must be achievable on a consistent basis under normal operational conditions. BACT limitations do not necessarily reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has the discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level. There are several reasons why the permitting authority might choose to do this. One reason is that the control efficiency achievable through the use of the technology may fluctuate, so that it would not always achieve its optimal control efficiency. In that case, setting the emission limitation to reflect the highest control efficiency would make violations of the permit unavoidable. To account for this possibility, a permitting authority must be allowed a certain degree of discretion to set the emission limitation at a level that does not necessarily reflect the highest possible control efficiency, but will allow the Permittee to achieve compliance consistently. While we recognize that greater than 98% may be achievable as an average during testing, IDEM allows for sources to include a safety factor, or margin of error, to allow for minor variations in the operation of the emission units and the control device.

**Step 4 – Evaluate the Most Effective Controls and Document Results**

(a) All of the controls listed in Table 3 are capable of achieving the same level of control. The Permittee has proposed to use a flare as the BACT for controlling VOC emissions from the vapor recovery units, SDS VRU and SDS VRU II for the following reasons:

A flare would be the most effective control, since it can be used to control almost any VOC stream, can typically handle large fluctuations in VOC concentration, flow rate, heating value, and inert species content, and it is appropriate for continuous, batch, and variable flow vent stream applications. As compared to a thermal oxidizer and catalytic oxidizer, a flare would have lower capital and operating costs and would use less auxiliary fuel (e.g., natural gas) to combust the

VOCs, resulting in less emission of nitrogen oxides and carbon monoxide from combustion of the auxiliary fuel.

A flare already exists at the source and is being used to control the SDS VRU. Therefore, this flare is the best option since the costs of purchasing a different, new control device would be much higher and would only achieve similar control efficiency.

(b) All of the controls listed in Table 4 are capable of achieving the same level of control. The Permittee has proposed to use carbon adsorption (carbon canisters) as the BACT for controlling VOC emissions from the SDS Shredder/SDS Shredder II, Anaerobic Thermal Desorption System enclosed feed conveyor, Oil-Water Separator, Tanks 52-55, 81-87, F-01, F-02, Distillation Unit, and Pot Still since the carbon canisters are able to achieve at least a 98% control efficiency.

**Step 5: Select BACT**

The Permittee proposes to use a flare, with carbon adsorption as backup, as the BACT for controlling VOC emissions vapor recovery units, SDS VRU and SDS VRU II. In addition, the Permittee proposes to use carbon adsorption (carbon canisters) as the BACT for controlling VOC emissions from the SDS Shredder/SDS Shredder II, Anaerobic Thermal Desorption System enclosed feed conveyor, Oil-Water Separator, Tanks 52-55, 81-87, F-01, F-02, Distillation Unit, and Pot Still. Upon evaluation of the BACT analyses, IDEM agrees with the BACT proposed by the source. IDEM, OAQ has determined that the following requirements represent BACT:

(a) The vapor recovery units, SDS VRU and SDS VRU II, shall be controlled by open flare FL1 with an overall VOC control efficiency (including the capture efficiency and destruction efficiency) of equal to or greater than 98%, at all times that SDS VRU and/or SDS VRU II are in operation, except during maintenance or malfunction of the flare FL1. During maintenance or malfunction of the flare FL1, the SDS VRU shall be controlled by the carbon adsorption system (C18) with an overall VOC control efficiency (including the capture efficiency and destruction efficiency) of equal to or greater than 98%, at all times that the SDS VRU is in operation and the SDS II VRU II shall be controlled by the carbon adsorption system (C38) with an overall VOC control efficiency (including the capture efficiency and destruction efficiency) of equal to or greater than 98%, at all times that the SDS II VRU II is in operation.

(b) VOC emissions after control from the SDS VRU shall be less than 23.4 tons of VOC per twelve (12) consecutive month period, with compliance determined at the end of each month.

(c) VOC emissions after control from all the emission units associated with the SDS II shall be less than 95.6 tons of VOC per twelve (12) consecutive month period, with compliance determined at the end of each month.

(d) Each of the emission units listed in the table below shall be controlled by the associated carbon adsorption system with an overall VOC control efficiency (including the capture efficiency and destruction efficiency) of equal to or greater than 98%, at all times that each of these emission units are in operation.

| Emission Unit(s) | Carbon Adsorption System |
|---|---|
| SDS Shredder | C14 |
| Anaerobic Thermal Desorption System enclosed feed conveyor | C15 |
| Oil-Water Separator | C16 |
| Water Tank | C17 |
| Distillation Unit | C19 |
| Tank 55 | C20 |
| Tanks 52 through 54 | C21 |
| Pot Still | C33 |
| SDS Shredder II | C37 |

| Emission Unit(s) | Carbon Adsorption System |
|---|---|
| F-01 and F-02 | C39 |
| Tanks 81 through 84 | C40 |
| Tank 85 | C41 |
| Tank 86 | C42 |
| Tank 87 | C43 |

Compliance with the above limits and conditions will satisfy the requirements of 326 IAC 8-1-6 (BACT).

**IDEM Contact**

(a) Questions regarding this proposed permit can be directed to Heath Hartley at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) 234-5174 or toll free at 1-800-451-6027 extension 4-5174.

(b) A copy of the findings is available on the Internet at: http://www.in.gov/ai/appfiles/idem-caats/

(c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
*We Protect Hoosiers and Our Environment.*
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

**Michael R. Pence**
*Governor*

**Thomas W. Easterly**
*Commissioner*

**SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED**

TO: Tita LaGrimas
Tradebe Treatment and Recycling, LLC
4343 Kennedy Avenue
East Chicago, IN 46312

DATE: February 25, 2015

FROM: Matt Stuckey, Branch Chief
Permits Branch
Office of Air Quality

SUBJECT: Final Decision
Title V Significant Source Modification
089-34432-00345

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:
David Jordan, Environmental Resources Management (ERM)
OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
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**Michael R. Pence**
*Governor*

**Thomas W. Easterly**
*Commissioner*

February 25, 2015

TO: East Chicago Public Library – Pastrick Branch

From: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Subject: **Important Information for Display Regarding a Final Determination**

**Applicant Name:** **Tradebe Treatment and Recycling, LLC**
**Permit Number:** **089-34432-00345**

You previously received information to make available to the public during the public comment period of a draft permit. Enclosed is a copy of the final decision and supporting materials for the same project. Please place the enclosed information along with the information you previously received. To ensure that your patrons have ample opportunity to review the enclosed permit, **we ask that you retain this document for at least 60 days.**

The applicant is responsible for placing a copy of the application in your library. If the permit application is not on file, or if you have any questions concerning this public review process, please contact Joanne Smiddie-Brush, OAQ Permits Administration Section at 1-800-451-6027, extension 3-0185.

Enclosures
Final Library.dot 6/13/2013

# Mail Code 61-53

| IDEM Staff | VHAUN 2/25/2015<br>Tradebe Treatment and Recycling LLC 089-34432-00345 FINAL | | | AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING |
|---|---|---|---|---|
| Name and address of Sender | ▶ | Indiana Department of Environmental Management<br>Office of Air Quality – Permits Branch<br>100 N. Senate<br>Indianapolis, IN 46204 | Type of Mail:<br>**CERTIFICATE OF MAILING ONLY** | |

| Line | Article Number | Name, Address, Street and Post Office Address | Postage | Handing Charges | Act. Value (If Registered) | Insured Value | Due Send if COD | R.R. Fee | S.D. Fee | S.H. Fee | Rest. Del. Fee / Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Tita LaGrimas Tradebe Treatment and Recycling LLC 4343 Kennedy Avenue East Chicago IN 46312 (Source CAATS) VIA CERTIFIED MAIL USPS | | | | | | | | | |
| 2 | | East Chicago City Council 4525 Indianapolis Blvd East Chicago IN 46312 *(Local Official)* | | | | | | | | | |
| 3 | | East Chicago Public Library 1008 W. Chicago Ave. East Chicago IN 46312 *(Library)* | | | | | | | | | |
| 4 | | Lake County Health Department-Gary 1145 W. 5th Ave Gary IN 46402-1795 *(Health Department)* | | | | | | | | | |
| 5 | | WJOB / WZVN Radio 6405 Olcott Ave Hammond IN 46320 *(Affected Party)* | | | | | | | | | |
| 6 | | Shawn Sobocinski 5950 Old Porter Rd Aprt 306 Portage IN 46368-1558 *(Affected Party)* | | | | | | | | | |
| 7 | | Mark Coleman 8 Turret Rd. Portage IN 46368-1072 *(Affected Party)* | | | | | | | | | |
| 8 | | Mr. Chris Hernandez Pipefitters Association, Local Union 597 45 N Ogden Ave Chicago IL 60607 *(Affected Party)* | | | | | | | | | |
| 9 | | David Jordan Environmental Resources Management (ERM) 11350 North Meridian, Suite 320 Carmel IN 46032 *(Consultant)* | | | | | | | | | |
| 10 | | Craig Hogarth 7901 West Morris Street Indianapolis IN 46231 *(Affected Party)* | | | | | | | | | |
| 11 | | Lake County Commissioners 2293 N. Main St, Building A 3rd Floor Crown Point IN 46307 *(Local Official)* | | | | | | | | | |
| 12 | | Anthony Copeland 2006 E. 140th Street East Chicago IN 46312 *(Affected Party)* | | | | | | | | | |
| 13 | | Barbara G. Perez 506 Lilac Street East Chicago IN 46312 (Affected Party) | | | | | | | | | |
| 14 | | Mr. Robert Garcia 3733 Parrish Avenue East Chicago IN 46312 *(Affected Party)* | | | | | | | | | |
| 15 | | Ms. Karen Kroczek 8212 Madison Ave Munster IN 46321-1627 *(Affected Party)* | | | | | | | | | |

| Total number of pieces Listed by Sender | Total number of Pieces Received at Post Office | Postmaster, Per (Name of Receiving employee) | The full declaration of value is required on all domestic and international registered mail. The maximum indemnity payable for the reconstruction of nonnegotiable documents under Express Mail document reconstructing insurance is $50,000 per piece subject to a limit of $50, 000 per occurrence. The maximum indemnity payable on Express mil merchandise insurance is $500. The maximum indemnity payable is $25,000 for registered mail, sent with optional postal insurance. See ***Domestic Mail Manual*** **R900, S913**, and **S921** for limitations of coverage on inured and COD mail. See ***International Mail Manual*** for limitations o coverage on international mail. Special handling charges apply only to Standard Mail (A) and Standard Mail (B) parcels. |
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# Mail Code 61-53

| | | | |
|---|---|---|---|
| IDEM Staff | VHAUN 2/25/2015<br>Tradebe Treatment and Recycling LLC 089-34432-00345 FINAL | | AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING |
| Name and address of Sender | ▶ | Indiana Department of Environmental Management<br>Office of Air Quality – Permits Branch<br>100 N. Senate<br>Indianapolis, IN 46204 | Type of Mail:<br>**CERTIFICATE OF MAILING ONLY** |

| Line | Article Number | Name, Address, Street and Post Office Address | Postage | Handing Charges | Act. Value (If Registered) | Insured Value | Due Send if COD | R.R. Fee | S.D. Fee | S.H. Fee | Rest. Del. Fee<br>Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Joseph Hero 11723 S Oakridge Drive St. John IN 46373 (Affected Party) | | | | | | | | | |
| 2 | | Gary City Council 401 Broadway # 209 Gary IN 46402 *(Local Official)* | | | | | | | | | |
| 3 | | Mr. Larry Davis 268 South, 600 West Hebron IN 46341 *(Affected Party)* | | | | | | | | | |
| 4 | | Ryan Dave 939 Cornwallis Munster IN 46321 *(Affected Party)* | | | | | | | | | |
| 5 | | David R Case Environmnetal Technology Council 1112 16th Street NW, Suite 420 Washington DC 20036 *(Affected Party)* | | | | | | | | | |
| 6 | | | | | | | | | | | |
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Message

**From**: Galbraith, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0ABF7F5C1A5E462E8096CB58EF9757EB-MGALBRAI]
**Sent**: 8/30/2017 11:52:51 AM
**To**: Young, Jessica [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=26404c78d3dc441f810ac723cf8f9d49-JBIEGELS]; Behan, Frank [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b37b3a6d67644ad3bf5717d99610941e-FBEHAN]; Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]; Kohler, Amanda [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=665a6cdd3371457fb03d5184f58f7a4a-Kohler, Amanda]; Gerhard, Sasha [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=409f48684eb4422cb13177fc9702d0fa-Gerhard, Sasha]
**CC**: Devlin, Betsy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b76a4bf5afc84459a6bf2a6a4645f40f-BDEVLIN]; Elliott, Ross [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=33cb08013cc94c21a3e3236dbad4c4a4-REELLIOT]; Sasseville, Sonya [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9302bd775fa84bebbbe0c430316f76c6-SSASSEVI]; Guernica, Mimi [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6c8a7d898ed74b678830c17ee521a045-MGUERNIC]; Radtke, Meghan [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=7a364f0faad54a79be238288fa3496cf-Radtke, Meghan]
**Subject**: RE: Request for meeting on TDUs

Tradebe is again asking if it would helpful for their technical staff to fly in for a meeting. I'm out labor day week, and ETC is coming in on sept 14th.

We could either have them come in sept 11-sept 13, or sometime after sept 14.

Thoughts??? I will be calling them back later this morning.

Mike Galbraith
Permits Branch (5303P)
Program Implementation/Information Division
Office of Resource Conservation and Recovery
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

(703) 605-0567

---

**From:** Johnson, Barnes
**Sent:** Friday, August 25, 2017 10:27 AM
**To:** Devlin, Betsy <Devlin.Betsy@epa.gov>; Elliott, Ross <Elliott.Ross@epa.gov>; Young, Jessica <Young.Jessica@epa.gov>; Behan, Frank <Behan.Frank@epa.gov>; Atagi, Tracy <Atagi.Tracy@epa.gov>; Sasseville, Sonya <Sasseville.Sonya@epa.gov>; Guernica, Mimi <Guernica.Mimi@epa.gov>; Kohler, Amanda <Kohler.Amanda@epa.gov>; Galbraith, Michael <Galbraith.Michael@epa.gov>; Lowery, Brigid <Lowery.Brigid@epa.gov>; Victorine, Gary <victorine.gary@epa.gov>
**Cc:** ORCR IO <ORCR_IO@epa.gov>
**Subject:** FW: Request for meeting on TDUs

FYI – my response to David. Stay tuned.

**Barnes Johnson**
USEPA | Resource Conservation and Recovery | Tel 703-308-8895 |
johnson.barnes@epa.gov | @EPAland

**From:** Johnson, Barnes
**Sent:** Friday, August 25, 2017 10:25 AM
**To:** 'David Case' <dcase@etc.org>
**Subject:** RE: Request for meeting on TDUs

Dear David,

My team and one or more of our colleagues from EPA's Region 5/Chicago office could meet with you on this topic. A key principal on this issue is out of the office the week of Labor Day. We would look to perhaps making arrangements for later the following week, perhaps September 14th? Colleagues copied on this email will be in touch to make specific arrangements.

Sincerely,

**Barnes Johnson**
USEPA | Resource Conservation and Recovery | Tel 703-308-8895 |
johnson.barnes@epa.gov | @EPAland

**From:** David Case [mailto:dcase@etc.org]
**Sent:** Thursday, August 24, 2017 11:18 AM
**To:** Johnson, Barnes <Johnson.Barnes@epa.gov>
**Subject:** Request for meeting on TDUs

Barnes,

The ETC requests a meeting with you and your staff to discuss your review of thermal desorption units (TDUs) that process hazardous wastes, the Region V analysis of TDUs operated by Tradebe, and your responses to the questions raised in the ETC letter of July 29, 2016 (copy attached). Please let me know if a meeting in early September can be arranged.

Feel free to call me if you would like to discuss. Thanks very much for your attention to this important concern.

David R. Case
Executive Director
1112 16th Street NW, Suite 420
Washington DC 20036
(202) 783-0870 x201

Environmental Technology Council

**Consolidated Report to the AA**
Office of Land and Emergency Management
*Office of Resource Conservation and Recovery*
**for the Weeks of 12/5/16 – 12/16/16**

## Informational/No Action

### RCRA Subtitle C Permit - Tradebe

- On December 5th, representatives from Tradebe Treatment and Recycling, LLC are meeting with ORCR. Tradebe is located in East Chicago, IN and accepts a wide variety of off-site wastes, including hazardous wastes. Their core process is liquid distillation for solvent recovery; other main processes are fuel blending and operation of solids distillation systems (SDS) that produce a degreaser product and fuels that are sent to hazardous waste burning cement kilns. The Environmental Technology Council (ETC) has objected to Indiana's decision to not require a RCRA subtitle C permit for the thermal treatment/recycling operations associated with their SDS operations (in part) because three facilities were required to obtain RCRA permits in Region 6 for similar activities. The ETC has stated that they intend to file a RCRA citizen's suit if the matter is not corrected. ORCR is working closely with Regions 5 and 6 to assess the issue.

### Sustainable Materials Management

- On December 6th, glass industry representatives will be meeting with ORCR regarding recycling measurement, the WARM model, and the current EPA waste hierarchy.
- On December 13th, ORCR will be meeting with Susan Robinson from Waste Management to discuss ongoing and future Waste Management and EPA efforts related to materials measurement.

### CERCLA 108(b)

- ORCR is meeting with groups of stakeholders including environmental groups, the hard rock mining industry, Congressional reps, financial instruments, and states, to provide a brief overview of the Hard Rock Mining rule.

## Speaking Engagements in the next 60 days

- On December 6th, Barnes Johnson will participate in Region 4's EPA-States, RCRA Director meeting in Atlanta, Georgia.
- On December 8th, ORCR will host RCRA Next – a one day discussion forum for exploring the directions RCRA could take during the next 40 years. Invited speakers will include stakeholders from industry, government, and others.
- On December 12-13, Kathleen Salyer will participate in the Resource Efficiency and Low Carbon Society: Identifying Opportunities and Implications under the G7-Alliance on Resource Efficiency in Tokyo, Japan. Kathleen will provide an update of U.S. work and participate in discussions to further resource efficiency in the U.S. and worldwide.
- On December 14-15, Kathleen Salyer will provide an update of U.S. work on sustainable materials management at the Workshop on International Resource Recycling under the G7-Alliance on Resource Efficiency in Tokyo, Japan.
- On January 7, Barnes Johnson will attend the Consumer Electronics Show in Las Vegas to present awards to e-Challenge participants and moderate a discussion panel entitled, "Sustainability Issues for a New Administration/Congress."

- (NEW) From January 10-12, Barnes Johnson (tentative) will chair the first meeting of the e-Manifest Advisory Board, to be held in Arlington, VA. The meeting will focus on systems operations for Day 1 of e-Manifest and user fees.

**Public Announcements in the next 60 days**

- (UPDATED) In early December, ORCR plans to release the final *Guidelines for Evaluating the Post-Closure Care Period for Hazardous Waste Disposal Facilities under Subtitle C of RCRA* (Post-Closure Care Guidance). This guidance recommends criteria for consideration in assuring that human health and the environment will be adequately protected in making decisions to extend, shorten, or end the post-closure care period for hazardous waste disposal facilities subject to Subtitle C of RCRA. The guidance has the additional benefit of helping regulated entities understand the factors that can affect the length of the post-closure care period and the costs associated with land disposal so they can better evaluate long-term waste management strategies, including waste minimization.
- On December 12th, ORCR will host a webinar on the Export/Import Rule.
- (NEW) In late December or early January, ORCR anticipates releasing " RCRA Public Participation Manual, 2016 Edition," (PPM) a user's guide for how community members, tribes, regulators, and industry can better utilize RCRA's provisions to achieve greater engagement in the permitting process. The PPM highlights digital and social media as communications tools for stakeholders.
- (NEW) In January, ORCR anticipates hosting a webinar on the proposed CERCLA 108(b) Hard Rock Mining rule. The webinar will provide an overview of the rule for stakeholders.

Message

**From**: Behan, Frank [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B37B3A6D67644AD3BF5717D99610941E-FBEHAN]
**Sent**: 9/14/2016 5:46:46 PM
**To**: Gerhard, Sasha [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=409f48684eb4422cb13177fc9702d0fa-Gerhard, Sasha]; Colon, Lilybeth [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6ae6d0cc3f984b08b8101569a2cf6308-Colon, Lilybeth]
**CC**: Galbraith, Michael [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0abf7f5c1a5e462e8096cb58ef9757eb-MGALBRAI]; Kohler, Amanda [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=665a6cdd3371457fb03d5184f58f7a4a-Kohler, Amanda]; Young, Jessica [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=26404c78d3dc441f810ac723cf8f9d49-JBIEGELS]; Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]; Sager, John [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b9aaed0c9130464bb2bc9c8c7c265061-JSAGER]
**Subject**: ETC control
**Attachments**: Case_TDU_OECA-16-001-1066.pdf

FYI – the ETC control has arrived. I got a copy from Valerie Ward earlier today.

Case_TDU_OEC...

9/14/16

# Correspondence Management System

**Control Number: OECA-16-001-1066**
**Printing Date: September 14, 2016 10:11:09**

CMS

## Citizen Information

**Citizen/Originator:** **ETC Counsil, ETC**
Organization: Environmental Technology Counsil
Address: 1112 16th St NW, WASHINGTON, DC 20036

**Constituent:** N/A
**Committee:** N/A **Sub-Committee:** N/A

## Control Information

| | | | |
|---|---|---|---|
| **Control Number:** | OECA-16-001-1066 | **Alternate Number:** | N/A |
| **Status:** | Pending | **Closed Date:** | N/A |
| **Due Date:** | Sep 30, 2016 | **# of Extensions:** | 0 |
| **Letter Date:** | Aug 10, 2016 | **Received Date:** | Aug 10, 2016 |
| **Addressee:** | N/A | **Addressee Org:** | N/A |
| **Contact Type:** | LTR (Letter) | **Priority Code:** | Normal |
| **Signature:** | N/A-AA-OLEM Assistant | **Signature Date:** | N/A |

**File Code:** 404-141-02-01_141_a(2) Copy of Controlled and Major Correspondence Record of the EPA Administrator and other senior officials - Electronic.

**Subject:** Thermal Desorption Units that Process Hazardous Waste

**Instructions:** na

**Instruction Note:** Recommend that ORCR respond. ETCâ##s concerns with the operation of the thermal desorption unit (TDU) at the R5 Tradebe facility primarily is a question of appropriate permitting. Recommend that ORCR respond. ETCâ##s concerns with the operation of the thermal desorption unit (TDU) at the R5 Tradebe facility primarily is a question of appropriate permitting.

**General Notes:** N/A

**CC:** N/A

## Lead Information

**Lead Author:** N/A

**Lead Assignments:**

| Assigner | Office | Assignee | Assigned Date | Due Date | Complete Date |
|---|---|---|---|---|---|
| Rowena Benitez-Clark | OECA | OLEM | Sep 13, 2016 | Sep 30, 2016 | N/A |
| | **Instruction:** N/A | | | | |
| Wanda McLendon | OLEM | OLEM-ORCR | Sep 14, 2016 | Sep 28, 2016 | N/A |
| | **Instruction:** N/A | | | | |

## Supporting Information

**Supporting Author:** N/A

**Supporting Assignments:**

| Assigner | Office | Assignee | Assigned Date |
|---|---|---|---|
| No Record Found. | | | |

## History

| Action By | Office | Action | Date |
|---|---|---|---|
| Rowena Benitez-Clark | OECA | Assign OECA-OCE as lead office | Aug 10, 2016 |
| Rowena Benitez-Clark | OECA | Control Taken Over | Aug 10, 2016 |
| Rowena Benitez-Clark | OECA | Assign OSWER as lead office | Aug 10, 2016 |
| Erin Miles | OECA | Control Taken Over | Aug 31, 2016 |
| Erin Miles | OECA | Assign OSWER as lead office | Aug 31, 2016 |
| Erin Miles | OECA | Control Taken Over | Sep 1, 2016 |
| Rowena Benitez-Clark | OECA | Reassigns control from Erin Miles to Rowena Benitez-Clark | Sep 8, 2016 |
| Rowena Benitez-Clark | OECA | Assign OLEM as lead office | Sep 13, 2016 |
| Wanda McLendon | OLEM | Accepted the group assignment | Sep 14, 2016 |
| Wanda McLendon | OLEM | Assign OLEM-ORCR as lead office | Sep 14, 2016 |

## Comments

| Commentator | Comment | Date |
|---|---|---|
| No Record Found. | | |

# Environmental Technology Council

1112 16th Street, NW
Suite 420
Washington, DC 20036
Tel: (202) 783-0870
Fax: (202) 737-2038
www.etc.org

**By Certified U.S. Mail**

**Electronic copy of this letter available at:**
**http://etc.org/media/7229/ETC-Letter-to-Cynthia-Giles-re-TDUs.pdf**

July 29, 2016

Ms. Cynthia Giles, Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency (Mail Code 2201A)
1200 Pennsylvania Ave. NW
Washington, DC 20460

Re: Request For A Meeting To Discuss Inconsistent Compliance
For Thermal Desorption Units That Process Hazardous Waste

Dear Ms. Giles:

The Environmental Technology Council, the trade association for the hazardous waste management industry, requests a meeting to discuss inconsistent enforcement and compliance policies being applied by different EPA regional offices to so-called Thermal Desorption Units (TDUs) that are used to thermally destroy hazardous wastes. Due to the significance of this matter, a meeting is requested at your earliest opportunity so that we can discuss measures to better insure enforcement consistency for the hazardous waste industry.

**Who we are**

The Environmental Technology Council (ETC) is a national trade association whose mission is "to promote the protection of public health and the environment through the adoption of environmentally sound procedures and technologies for recycling and detoxifying industrial wastes and by-products and properly managing and disposing of wastes and waste residues." *See www.etc.org*. Consistent with this mission, ETC members have a substantial interest in insuring consistency on how environmental compliance requirements are applied within our industry.

**Why we've contacted you**

ETC understands that the Office of Enforcement and Compliance Assurance (OECA) will address pollution problems that impact American communities through vigorous civil and criminal enforcement that targets the most serious water, air and chemical hazards. As part of this mission, OECA works to advance environmental justice by protecting communities most vulnerable to pollution. Due to the human health risks and environmental justice concerns of burning hazardous wastes in TDUs without a permit under the Resource Conservation and Recovery Act (RCRA), ETC believes that OECA should be briefed on the serious matter.

**Who this matter concerns**

Tradebe Treatment and Recycling, LLC ("Tradebe"), located at 4343 Kennedy Avenue, East Chicago, Indiana, owns and operates two TDUs that process significant volumes of hazardous waste. Tradebe's overall operations include hazardous waste fuel blending, lab pack depacking and bulking, tank storage and treatment, and container storage, all of which are subject to RCRA Permit USEPA ID # IND 000646943. However, the two TDUs for thermally destroying hazardous wastes are allegedly "exempted" from the company's RCRA permit. Tradebe uses the TDUs to treat an extensive list of hazardous wastes such as "paint waste, solvent soaked rags, resins, polymers, plastics, production debris, and discarded commercial chemicals" as advertised in their own sales brochure (Attachment A hereto). As EPA is aware, the term "treatment" is broadly defined in RCRA to include "any method, technique, or process" that is designed to change "the physical, chemical, or biological character or composition of any hazardous waste." The Tradebe TDUs are engaged in thermal destruction of a significant portion of the hazardous waste feed to those units in addition to desorbing some organic compounds for recovery. By statute and regulation, any "person owning or operating an existing facility … for the treatment, storage, or disposal of hazardous waste" must have a permit issued under RCRA. 40 C.F.R. § 270.1(b).

Tradebe's TDUs have a combined total maximum throughput rate of 78,000 tons of hazardous waste per year, which is comparable to a large, commercial RCRA-permitted incinerator.

**Inconsistent enforcement between EPA Region 5 and other EPA regional offices**

EPA Region 5 has not required Tradebe to include the TDUs within the company's current RCRA permit and has not taken any enforcement action with respect to the ongoing thermal destruction of hazardous wastes in those units. In contrast, in 2008 EPA Region 6 pursued an enforcement action against Rineco Chemical Industries in Benton, Arkansas, for thermal destruction of hazardous wastes in a TDU without a RCRA permit. The Federal district court agreed with Region 6 and ordered Rineco to obtain a RCRA permit or cease its TDU operations. *United States v. Rineco Chemical Industries, Inc.*, 2009 WL 801608 (E.D. Ark. 2009) (Attachment B). Likewise, EPA Region 6 entered into a Consent Agreement and Final Order with US Ecology Texas, Inc. and TD*X Associates L.P. to require a RCRA permit for thermal destruction of hazardous wastes in a TDU. https://yosemite.epa.gov/OA/RHC/EPAAdmin.nsf/Filings/77636784A15FA1CC85257E05001BBF43/$File/usecology2.pdf. Recently, EPA Region 6 submitted comments on a draft RCRA permit for two TDUs to be operated by Chemical Waste Management in Carlyss, Louisiana, confirming that the RCRA permit should include controls similar to a hazardous waste incinerator (Attachment C).

The positions of EPA Region 5 and EPA Region 6 with respect to RCRA permits and enforcement for TDUs that thermally destroy hazardous wastes means that human health and environmental protection depends on the region where a TDU is located, not on consistent EPA enforcement and compliance. The conflicting positions of EPA Region 5 and Region 6 also create an unlevel regulatory program for the hazardous waste industry.

**Thermal destruction of hazardous waste in TDUs**

There can be no doubt that the Tradebe TDU's are engaged in the thermal destruction of a significant portion of the hazardous waste feed, even if they are also engaged in some recovery of liquid organics through desorption. The fact that the TDUs are used to recover organics does not exempt the thermal destruction of hazardous wastes from RCRA requirements. Thermal destruction is demonstrated by the following:

1. A mass balance of the hazardous wastes fed to the Tradebe TDUs compared to the recovered organics, metal, and other residuals, reveals that a significant volume of waste feed is thermally disposed. The court in *U.S. v. Rineco* used this mass balance test to determine that Rineco's TDU was engaged in unregulated thermal destruction in violation of RCRA. The court used Rineco's own documentation to show that a substantial percentage of waste fed to the unit "was unaccounted for, *i.e.*, disposed of, burned, or incinerated in the treatment process". 2009 WL 801608 at 9. Per Tradebe's own advertising brochure (Attachment A), Tradebe processes 36,000 tons of hazardous waste per year in the TDUs and recovers only 7,000 tons of scrap metal and 10,200 tons of solvent. Even accounting for an estimated 10,000 tons of other residuals, primarily water and char, only 27,000 tons of hazardous waste feed can be accounted for on a mass balance basis. That means that at least 9,000 tons of hazardous waste, or 25% of the waste feed, is thermally destroyed in the TDUs per year without a RCRA permit.

2. There are no controls on the hazardous wastes that are fed to the TDUs, and the feed is not restricted to wastes with recoverable hydrocarbons. According to Tradebe, the TDUs can accept a broad range of hazardous wastes including paint waste, rags, resins, polymers, plastics, production debris, and discarded commercial chemicals. Many other types of hazardous wastes are available on-site and no permit or other restrictions apply to the waste feed. It is essential for a RCRA-regulated thermal treatment facility to restrict the composition of the feed so that emissions of hazardous chemical compounds do not exceed prescribed emission limits. A RCRA permit is required so that appropriate feed limits can be established for the TDUs. This is particularly important because, while some of these wastes may yield organics for recovery, the remaining waste materials are thermally destroyed in the TDUs' heated rotating drums, while non-condensable gases are burned in flares that are an integral part of the disposal operation.

3. There are no operating parameter limits on temperature, oxygen, or other conditions to assure that emissions are controlled. Tradebe claims that the TDUs are operated in an "anaerobic atmosphere," but there are no permit limits or other restrictions on oxygen concentration and no public monitoring reports. EPA has stated in technical papers that oxygen levels in thermal desorption units must be maintained at less than 2 percent to limit combustion. *How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites, Chapter VI: Low-Temperature Thermal Desorption* (EPA 510-B-95-007). Only through the engineering review and comprehensive performance testing that are part of a RCRA permit can appropriate operating parameter limits (OPLs) be established for the TDUs to assure

continuing compliance with emission limits. Currently no permit limits or other regulatory controls address these parameters.

4. The fact that the TDUs produce a large volume of char demonstrates that RCRA-regulated thermal destruction is occurring. EPA asserted in the Rineco case, and the court agreed, that the fact that the Rineco TDU produced a residual char for disposal "indicates that the destruction of organic materials takes place" *U.S. v. Rineco*, 2009 WL 801608 at 9. Likewise, the Tradebe TDUs produce a substantial volume of char, which alone is conclusive evidence that thermal destruction of hazardous wastes is occurring. According to a state inspection report, Tradebe generates approximately 10 to 13 roll-offs of char from the TDUs per week depending upon operations. IDEM Inspection Report (Jan. 7, 2016), IDEM Doc. # 80205392. The char itself must be classified as a hazardous waste under EPA's derived-from rule because it is generated from the treatment and disposal of listed hazardous wastes. 40 CFR §261.3(c). Therefore, the char must meet the treatment standards in 40 CFR Part 268 applicable to the hazardous wastes that are thermally destroyed in the TDUs prior to land disposal in a RCRA-permitted landfill. Based upon information and belief, Tradebe disposes of char at landfills without meeting the treatment standards and land disposal prohibitions of RCRA.

5. The TDUs vent non-condensed hazardous waste gases to flares for combustion as an integral part of their operation, classifying the entire unit as RCRA-regulated thermal treatment. A significant portion of the gas stream from processing hazardous wastes in the TDUs is not recovered, but instead is directed as a non-condensed gas to flares where it is burned. The flares are enclosed devices that use "controlled flame combustion" to destroy organics and therefore are engaged in incineration. The Tradebe TDUs are designed to intentionally drive volatile gases off the hazardous waste and then use the flares as an integral part of the process to combust those gases which are non-condensable. That is different from other units (e.g., tanks) that use flares to control gases which are incidental and not deliberately formed as a primary element of their operation. The court in *U.S. v. Rineco* found that venting of vapor/inerts to a similar TDU constituted "burning and incineration" in violation of RCRA. 2009 WL 801608 at 9. No emission limits for hazardous air pollutants, such as dioxin/furans, hydrochloric acid, mercury and other listed toxic metals apply to the Tradebe TDUs' flare emissions. In fact, Tradebe's Title V Permit only requires that the flares achieve a destruction and removal efficiency (DRE) of 98 percent. RCRA regulations, on the other hand, require that the incineration of hazardous wastes achieve a DRE of 99.99%. 40 CFR § 264.343(a)(1). Thus, the Tradebe TDUs may emit hazardous air pollutants at an amount more than two orders of magnitude greater than regulatory standards and a RCRA permit would allow.

Based on all the foregoing, Tradebe is engaged in the RCRA-regulated thermal destruction of hazardous wastes in the TDUs, and the land disposal of residual char that is a derived-from hazardous waste, in violation of the permitting requirements, air emission standards, and regulatory conditions of RCRA.

**Tradebe's TDUs do not qualify for the "recycling process" exemption**

Contrary to Tradebe's customer brochures, the TDUs do not qualify for the exemption from RCRA regulations as a "recycling process" under 40 CFR § 261.6(c)(1). First, even assuming the exemption was available for the recovery of organics, the exemption cannot extend to the aspect of the TDU operation that involves the thermal destruction of hazardous wastes. Some recovery of organics does not mean that the substantial treatment and thermal destruction of hazardous wastes in the TDUs is exempt from RCRA permit requirements.

This is exactly what the court ruled in the Rineco case. The court found that the Rineco TDU did not qualify for the recycling exemption in § 261.6(c)(1) "because substantial hazardous wastes that are treated in the [unit] are destroyed by thermal treatment and not recycled in the [unit]." 2009 WL 801608 at 8. The court cited EPA's own explanation in a regulatory preamble:

> [W]e wish to clarify that materials being burned in… thermal treatment devices… are considered to be abandoned by being burned or incinerated under §261.2(a)(1)(ii), whether or not energy or material recovery also occurs.… In our view, any such burning … is waste destruction subject to regulation either under Subpart O of Part 264 or Subpart O and P of Part 265. If energy or material recovery occurs, it is ancillary to the purpose of the unit – to destroy wastes by means of thermal treatment – and so does not alter the regulatory status of the device or the activity [2009 WL 801608 at 8, quoting 48 Fed. Reg. 14472, 14484 (1983) (internal quotes omitted].

As described above, at least 25 percent of the hazardous waste feed to the Tradebe TDUs is disposed by thermal treatment, and "any such burning" is RCRA-regulated thermal treatment that does not qualify for the § 261.6(c)(1) exemption.

Second, a major part of Tradebe's business is the blending and processing of hazardous wastes into fuels for burning in cement kilns. Tradebe itself admits that the oil, char, and other residuals from the TDUs are directed into their fuel blending operations. For example, Tradebe's brochures states: "After processing [in the TDUs], a portion of the residual material can be beneficially used in energy recovery." Tradebe Brochure, Attachment D, p.2. However, EPA's regulations are clear that hazardous wastes are not subject to the recycling exemption but are regulated under RCRA permit requirements when "burned for energy recovery in boilers and industrial furnaces [BIFs]" 40 CFR §261.6(a)(2). Because Tradebe processes hazardous wastes in the TDUs and then uses the residuals to produce fuels that are "burned for energy recovery" in cement kilns, the exemption from RCRA permitting for recycling operations is not available.

This was another major holding in the Rineco case. The court carefully analyzed the regulatory language in § 261.6, finding that "recyclable materials, i.e., hazardous wastes burned for energy recovery in BIFs" are not subject to the recycling process exemption, "but instead are regulated under Subparts C through H of Part 266." 2009 WL 801608 at 6. Under Subpart H, "[o]wners and operators of facilities that store or treat hazardous waste that is burned in a boiler or industrial furnace are subject to the applicable provisions of Sections 264, 265, and 270 of this

regulation." *Id.* The Subpart H regulations provide that "[t]hese standards apply to storage and treatment by the burner as well as to storage and treatment facilities operated by intermediaries (processors, blenders, distributors, etc.) between the generator and the burner." *Id.* (emphasis added).

Just like Rineco, Tradebe is an intermediary fuel blender that treats hazardous wastes in the TDUs that are then blended and burned for energy recovery in BIFs. Therefore, the exemption set forth in §261.6(c)(1) for recycling processes is inapplicable to Tradebe.

As the court ruled in the Rineco case, a contrary ruling would mean:

> [A]ny hazardous waste treatment unit that processed an incidental amount of recovered material that is not burned for energy recovery would qualify for the recycling exemption. Such an interpretation is contrary to the regulations and RCRA's purpose to ensure the proper treatment, storage and disposal of hazardous waste so as to minimize the present and future threat to human health and the environment" 2009 WL 801608 at 8.

**EPA Region 6 Determination Letter**

The Rineco case resulted from an enforcement action taken by EPA Region 6. In addition, EPA Region 6 recently issued a letter of clarification on May 2, 2016, regarding the hazardous waste regulatory standards for TDUs installed at RCRA treatment, storage and disposal facilities (TSDFs) ( Attachment E). This letter states in part:

> If a TDU combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable materials [40 C.F.R. §261.6(a)(l)] is considered thermal treatment that is regulated by RCRA. The material being treated (oil-bearing hazardous waste) is already a hazardous waste. Heating hazardous wastes to a gaseous state is subject to regulation under RCRA as treatment of hazardous waste, and thermal treatment after a material becomes a hazardous waste is fully regulated under RCRA. 54 Fed. Reg. 50968, 50973 (December 11, 1989). Thus, thermal treatment of the vent gas requires a RCRA permit.
>
> If the vent gas is combusted in the combustion chamber of the TDU, then a permit under 40 C.F.R. Part 264, Subpart O is required, because the TDU would meet the definition of incinerator in 40 C.F.R. §260.10 (an enclosed device that uses controlled flame combustion). If, on the other hand, the vent gas is vented to and combusted in a thermal oxidizing unit (TOU), the permitting authority may be able to permit the entire unit (TDU and TOU) as a miscellaneous unit under 40 C.F.R. Part 264, Subpart X. A RCRA permit would be required even if the facility is operating as a RCRA exempt recycling activity under 40 C.F.R. §261.6(a)(3)(iv)(C). If the permitting authority decides to issue a 40 C.F.R. Part 264, Subpart X permit, the permitting authority is required to include in the

> permit requirements from 40 C.F.R. Part 264, Subparts I through O, AA, BB, and CC, 40 C.F.R. Part 270, 40 C.F.R. Part 63, Subpart EEE, and 40 C.F.R. Part 146 that are appropriate for the miscellaneous unit being permitted as required in 40 C.F.R.§264.601.

In short, the Region 6 letter clearly states that TDUs which are combusting all or a portion of the TDU vent gas are required to obtain a RCRA permit for such treatment units, and they are required to comply with the HWC MACT in addition to other standards.

**Previous efforts to obtain EPA review and action**

This letter is not the first attempt that we have made to prompt EPA into enacting a consistent compliance policy towards TDUs like the Tradebe units. In 2006, ETC submitted letters to the Indiana Department of Environmental Management (IDEM) and EPA Region 5 objecting to the apparent RCRA-exempt recycling status of the initial TDU at the Tradebe facility (then operated by Pollution Control Industries, Tradebe's predecessor corporation). In 2010, ETC again submitted a letter to EPA Region 5 seeking a determination on PCI's claim that the TDU was an exempt unit. During 2014, ETC learned that Tradebe was installing a second TDU and in 2015 ETC submitted adverse comments to Region 5 and IDEM on their draft air permit modification which would allow the new TDU to operate. IDEM issued a final air permit modification approval to Tradebe, ignoring ETCs comments, and Region 5 issued its decision in support of IDEMs approval. Consequently, on June 12, 2015, ETC filed a Clean Air Act petition under 40 CFR § 70.8 with Region 5, objecting to the issuance of the air permit modification to Tradebe. To date, more than a year later, EPA Region 5 has not responded to the ETC petition.

**Notice of intent to file a RCRA Citizen Suit**

After greater than 10 years, ETC is now running out of options to encourage Region 5 to regulate the Tradebe TDUs in a manner consistent with other hazardous waste processing TDUs (i.e., insure they are RCRA permitted and comply with the HWC MACT standards). A legal option that ETC has considered is to submit a citizen suit notice letter under RCRA, 42 U.S.C. § 6972(a), of intent to file suit against the Administrator for failure to perform her non-discretionary duties and against Tradebe for violation of the requirement to obtain a RCRA permit for treatment and disposal of hazardous wastes in its TDUs. Last year the Hoosier Environmental Council (HEC), an environmental group in Indiana, conducted the first comprehensive assessment of environmental justice in the East Chicago, Indiana, region where the Tradebe facility is located, documenting that the community has "long suffered a hugely disproportionate share of Indiana's pollution burden" *Assessment of Environmental Justice Needs In Northern Lake County Communities*, http://www.hecweb.org/wp-content/uploads/2010/04/HEC-Assessment-of-EJ-Needs-in-Northern-Lake-County-Communities-FINAL-REPORT2.pdf, at p. 6. If the Tradebe TDUs were required to obtain a RCRA permit, the East Chicago community would have an opportunity for their environmental justice concerns to be taken into account pursuant to EPA's published guidance on consideration of environmental justice in permitting.

In an attempt to avoid the need to pursue a RCRA citizen suit, ETC is now requesting a meeting with you and your senior staff as a final measure in the hopes of trying to initiate concrete actions that would bring Tradebe into the same permitting and regulatory compliance protocols that other commercial TDUs must meet.

In conclusion, I intend to follow-up with you to set up the requested meeting so that we can discuss actions that will resolve our concerns, while ensuring a consistent compliance policy by EPA with regards to hazardous waste TDUs.

Respectfully submitted,

David Case
Executive Director and General Counsel
Environmental Technology Council
1112 16th Street, N.W., Suite 420
Washington, DC 20036
(202) 783-0870 ext. 201
Email: dcase@etc.org

Message

**From**: Fruitwala, Kishor [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=7A19009BA86A4236B97131D5D16F2FAE-FRUITWALA, KISHOR]
**Sent**: 6/7/2018 6:17:29 PM
**To**: Luschek, Robert [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=cd6769c1089e464ebe6e5f345960a0cf-Luschek, Robert]; Potts, Mark [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f0f11dc437f944fd8cb779b3316de870-Potts, Mark]; Tidmore, Guy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e9af087a1ce4703b25a4a8e6fa048dd-Tidmore, Guy]; Jones, Bruced [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9026926c877140cbae1d4c0739729813-Jones, Bruced]; Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]; Przyborski, Jay [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d9b737242096491996b9d73451f3e848-Przyborski, Jay]
**Subject**: LDEQ approach to Verified Recycler Exemption

Hi All,

Please see note below from Kevin Matthews regarding Thermaldyne, LA. Please let me know your availability on Wed, June 13 in the morning, and anytime on Thurs, June 14.

Thank you so much.

Kishor

---

**From:** Kevin Matthews [mailto:KMatthews@nationalstrategies.com]
**Sent:** Wednesday, June 06, 2018 11:06 AM
**To:** Fruitwala, Kishor <Fruitwala.Kishor@epa.gov>
**Cc:** Luschek, Robert <Luschek.Robert@epa.gov>; Potts, Mark <Potts.Mark@epa.gov>; Tidmore, Guy <tidmore.guy@epa.gov>; Jones, Bruced <Jones.Bruced@epa.gov>; Atagi, Tracy <Atagi.Tracy@epa.gov>
**Subject:** RE: LDEQ approach to Verified Recycler Exemption

Kishor,
I check and Wednesday 6/13 is our preferred date and Thursday is the alternate. We'd like to avoid Friday if at all possible. Please let me know what works for Region 6. On our end it will be:

Carl Palmer and Gregg Meyers of TD*X
Andy Marshall of US Ecology
JD Head – counsel to TD*X
Myself – consultant to TD*X and USE.

Thanks

---

**From:** Fruitwala, Kishor [mailto:Fruitwala.Kishor@epa.gov]
**Sent:** Wednesday, June 6, 2018 10:00 AM
**To:** Kevin Matthews <KMatthews@nationalstrategies.com>
**Cc:** Luschek, Robert <Luschek.Robert@epa.gov>; Potts, Mark <Potts.Mark@epa.gov>; Tidmore, Guy <tidmore.guy@epa.gov>; Jones, Bruced <Jones.Bruced@epa.gov>; Atagi, Tracy <Atagi.Tracy@epa.gov>
**Subject:** RE: LDEQ approach to Verified Recycler Exemption

Kevin,

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Thank you.

Kishor

Kishor Fruitwala, Ph.D.
Chief, RCRA Permits Section (6MM-RP)
Multimedia Division, EPA Region 6
214-665-6669

---

**From:** Spalding, Susan
**Sent:** Tuesday, May 29, 2018 3:47 PM
**To:** Kevin Matthews <KMatthews@nationalstrategies.com>
**Cc:** Fruitwala, Kishor <Fruitwala.Kishor@epa.gov>; Luschek, Robert <Luschek.Robert@epa.gov>; Potts, Mark <Potts.Mark@epa.gov>
**Subject:** RE: LDEQ approach to Verified Recycler Exemption

Kevin – thanks for your note. I am copying Kishor Fruitwala and Rob Luschek from my branch and Mark Potts from enforcement in my reply for their follow-up. Also including Bruce Jones from Regional Counsel. I am retiring tomorrow so I will ask Kishor to take the lead on scheduling a discussion. I suspect they will also want to coordinate with EPA HQ.

Susan Spalding, Associate Director
Hazardous Waste Branch
EPA Region 6
(214) 665-8022

---

**From:** Kevin Matthews [mailto:KMatthews@nationalstrategies.com]
**Sent:** Tuesday, May 29, 2018 2:41 PM
**To:** Spalding, Susan <Spalding.Susan@epa.gov>
**Subject:** LDEQ approach to Verified Recycler Exemption

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Many thanks,
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T 202 . 349 . 7010 (DIRECT)
kmatthews@nationalstrategies.com
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Message

**From**: Langman, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=55EA079A6E644B218C8A465FB8F8E5C8-MLANGMAN]
**Sent**: 9/14/2016 4:07:51 PM
**To**: Gerhard, Sasha [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=409f48684eb4422cb13177fc9702d0fa-Gerhard, Sasha]; Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]; Galbraith, Michael [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0abf7f5c1a5e462e8096cb58ef9757eb-MGALBRAI]; Colon, Lilybeth [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6ae6d0cc3f984b08b8101569a2cf6308-Colon, Lilybeth]; Behan, Frank [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b37b3a6d67644ad3bf5717d99610941e-FBEHAN]; Elliott, Ross [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=33cb08013cc94c21a3e3236dbad4c4a4-REELLIOT]; Victorine, Gary [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=62bfb0d07a1749e59a3b54f7f4a1e191-GVictori]; Lee, Jae [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e8957da9f254aab83632814f05d1cd2-JLee10]
**CC**: Setnicar, Mary [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b4cedae7b8aa4f3b968d7a6a40de75ec-MSetnica]; Cunningham, Michael [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0ce197b42b574909995fe91bdfe04ba6-MCunning]
**Subject**: Tradebe's CAA Title V operating permit

**Flag**: Flag for follow up

Hi all,

Tradebe's CAA Title V operating permit can be found at http://permits.air.idem.in.gov/34432f.pdf. Relevant to the discussion here is ETC's comment about 40 CFR 63 Subpart EEE's applicability to Tradebe's thermal desorption units (TDUs) and IDEM's response. IDEM's response to comments can be found in the addendum to the technical support document (ATSD), which can be found beginning on pdf page 398. Here's where you can find certain documents in the linked pdf:

- ATSD Page 9-11 (pdf page 406-408): Summary of ETC's comment and IDEM's response, citing two RCRA documents:
  - RCRA Online Number 14266
  - RCRA Online Number 13657
- ATSD Appendix A (pdf page 409-502): ETC's full comment with supporting attachments
  - PDF page 410-413: ETC's full comments
  - PDF Page 414-443: Attachment - Rineco decision
  - PDF page 444-448: Attachment – Tradebe's brochure about the TDUs
  - PDF page 449-502: Attachment – TD*X CAFO from Region 6
- ATSD Appendix B (pdf page 503-504): IDEM's July 18,2002 determination that the TDUs meet the recycling process exclusion pursuant to 40 CFR 261.6(c)(1)
- ATSD Appendix C (pdf page 505-508): IDEM's March 31, 2006 letter to ETC regarding legitimate recycling of hazardous waste for the TDU

ETC's petition to object to Tradebe's Title V operating permit can be found at https://www.epa.gov/sites/production/files/2015-08/documents/tradebe_petition2015.pdf.

Please let me know if you can't access any of the linked documents.

Thanks,
Michael Langman
Environmental Scientist
Air Permits Section, US EPA Region 5
Email: langman.michael@epa.gov
Phone: 312-886-6867

Message

**From**: Kevin Matthews [KMatthews@nationalstrategies.com]
**Sent**: 6/6/2018 4:05:33 PM
**To**: Fruitwala, Kishor [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=7a19009ba86a4236b97131d5d16f2fae-Fruitwala, Kishor]
**CC**: Luschek, Robert [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=cd6769c1089e464ebe6e5f345960a0cf-Luschek, Robert]; Potts, Mark [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f0f11dc437f944fd8cb779b3316de870-Potts, Mark]; Tidmore, Guy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e9af087a1ce4703b25a4a8e6fa048dd-Tidmore, Guy]; Jones, Bruced [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9026926c877140cbae1d4c0739729813-Jones, Bruced]; Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]
**Subject**: RE: LDEQ approach to Verified Recycler Exemption

Kishor,
I check and Wednesday 6/13 is our preferred date and Thursday is the alternate. We'd like to avoid Friday if at all possible. Please let me know what works for Region 6. On our end it will be:

Carl Palmer and Gregg Meyers of TD*X
Andy Marshall of US Ecology
JD Head – counsel to TD*X
Myself – consultant to TD*X and USE.

Thanks

---

**From:** Fruitwala, Kishor [mailto:Fruitwala.Kishor@epa.gov]
**Sent:** Wednesday, June 6, 2018 10:00 AM
**To:** Kevin Matthews <KMatthews@nationalstrategies.com>
**Cc:** Luschek, Robert <Luschek.Robert@epa.gov>; Potts, Mark <Potts.Mark@epa.gov>; Tidmore, Guy <tidmore.guy@epa.gov>; Jones, Bruced <Jones.Bruced@epa.gov>; Atagi, Tracy <Atagi.Tracy@epa.gov>
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Message

**From:** Galbraith, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0ABF7F5C1A5E462E8096CB58EF9757EB-MGALBRAI]
**Sent:** 1/19/2017 12:19:51 PM
**To:** Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]; Young, Jessica [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=26404c78d3dc441f810ac723cf8f9d49-JBIEGELS]; Kaps, Melissa [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2fd9ca1cc4f145df83c8bdd2b683a290-mkaps]
**Subject:** Fw: TDUs
**Attachments:** removed.txt; ATT00001.htm

etc's legal argument below

Mike Galbraith
Permits Branch (5303P)
Program Implementation/Information Division
Office of Resource Conservation and Recovery
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

---

**From:** Radtke, Meghan
**Sent:** Thursday, January 19, 2017 6:31 AM
**To:** Galbraith, Michael
**Subject:** Fwd: TDUs

Wasn't sure who else is working on this at the staff level. Trust you will distribute accordingly!

Meghan

Meghan Radtke, Ph.D.
Special Assistant
Office of Resource Conservation and Recovery
Office of Land and Emergency Management
Office: 703-347-0229
Mobile: 703-472-8215

Begin forwarded message:

**From:** "Johnson, Barnes" <Johnson.Barnes@epa.gov>
**Date:** January 18, 2017 at 17:43:17 EST
**To:** "Devlin, Betsy" <Devlin.Betsy@epa.gov>, "Elliott, Ross" <Elliott.Ross@epa.gov>, "Sasseville, Sonya" <Sasseville.Sonya@epa.gov>, "Guernica, Mimi" <Guernica.Mimi@epa.gov>, ORCR IO <ORCR_IO@epa.gov>
**Cc:** "Michaud, John" <Michaud.John@epa.gov>, "Lewis, Jen" <Lewis.Jen@epa.gov>
**Subject: FW: TDUs**

FYI – at the eManifest FACA meeting last week I asked David the specifics of his threatened suit. He offered to send me an email to explain. The discussion below outlines the basis of including EPA as a defendant in his threatened citizen suit.

**Barnes Johnson**

USEPA | Resource Conservation and Recovery | Tel 703-308-8895 | johnson.barnes@epa.gov | @EPAland

**From:** David Case [mailto:dcase@etc.org]
**Sent:** Tuesday, January 17, 2017 2:59 PM
**To:** Johnson, Barnes <Johnson.Barnes@epa.gov>
**Subject:** TDUs

Barnes,

You asked me last week to explain the legal basis for including EPA in the citizen suit that has been drafted. Here is a short summary:

RCRA Section 3007 requires the Administrator or authorized state "to thoroughly inspect every facility for the treatment, storage, or disposal of hazardous waste for which a [RCRA] permit is required" at least every two years. RCRA uses the word "shall" which makes this inspection requirement a mandatory, non-discretionary duty. Upon information and belief, EPA has not conducted a RCRA inspection of the thermal desorption units (TDUs), nor has the State of Indiana.

In addition, RCRA Section 3005 requires a permit for the thermal treatment and disposal of hazardous wastes in the TDUs, and the regulatory exemption for recycling units does not apply. Because the facility does have a RCRA permit for its other hazardous waste activities, but not for thermal treatment and destruction of hazardous wastes in the TDUs, the Administrator also has a non-discretionary duty to revoke the facility's RCRA permit. RCRA Section 3005(e) provides: "Upon a determination by the Administrator … of noncompliance by a facility having a permit under this chapter with the requirements of this section …, the Administrator … shall revoke such permit." The facility is in noncompliance with the requirements of RCRA section 3005 to obtain a RCRA permit for operation of the TDUs or to include the TDUs within its current

permit. RCRA Section 3005(e) uses the word "shall" which makes permit revocation a mandatory, non-discretionary duty.

EPA can satisfy its non-discretionary duties under RCRA by conducting a thorough inspection of the TDUs' operations and including the TDUs within the facility's current or renewed RCRA permit. We believe the facility's RCRA permit is scheduled for renewal this year.

---

David R. Case

Executive Director

1112 16th Street NW, Suite 420

Washington DC 20036

(202) 783-0870 x201

Environmental Technology Council

Message

**From**: Fruitwala, Kishor [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=7A19009BA86A4236B97131D5D16F2FAE-FRUITWALA, KISHOR]
**Sent**: 6/6/2018 2:00:16 PM
**To**: Kevin Matthews [KMatthews@nationalstrategies.com]
**CC**: Luschek, Robert [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=cd6769c1089e464ebe6e5f345960a0cf-Luschek, Robert]; Potts, Mark [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f0f11dc437f944fd8cb779b3316de870-Potts, Mark]; Tidmore, Guy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e9af087a1ce4703b25a4a8e6fa048dd-Tidmore, Guy]; Jones, Bruced [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9026926c877140cbae1d4c0739729813-Jones, Bruced]; Atagi, Tracy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ebcfd670077440dfb63a691749f20af2-TATAGI]
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TRADEBE
Environmental Services™

# Tradebe

# Treatment and Recycling LLC

## East Chicago, IN 46312

## RCRA Part B Permit

## EPA ID #: IND000646943

Effective date: 12-24-2011

Expiration date: 12-31-2016


4343 Kennedy Avenue · East Chicago, IN 46312 · Phone: (800) 388-7242 · (219) 397-3911 · Fax: (219) 397-3441 · www.tradebe.com

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# HAZARDOUS WASTE MANAGEMENT PERMIT

Name of Permittee: Tradebe Treatment and Recycling, LLC

Facility Location: 4343 Kennedy Avenue, East Chicago, Indiana

EPA Identification Number: IND000646943

Issuance Date: December 8, 2011

Expiration Date: December 30, 2016

Authorized Activities

Pursuant to Indiana Environmental Statutes (IC 13) and the rules promulgated thereunder and codified in Title 329 of the Indiana Administrative Code, Article 3.1 (329 IAC 3.1), the State permit conditions (hereinafter called the permit) of the Resource Conservation and Recovery Act of 1976 (RCRA) permit are issued to Tradebe Treatment and Recycling, LLC (hereinafter called the Permittee or Tradebe) to operate a hazardous waste facility located in East Chicago, Indiana, Section 28, Township 37 North, Range 9 West at latitude 41° 38′ N and longitude 87° W, Whiting Quadrangle, on the U.S. Geological Survey topographic map.

The State RCRA program is authorized under 40 CFR Part 271 and Section 3006 of RCRA to administer the hazardous waste management program in lieu of the Federal program, including administration of most of the Hazardous and Solid Waste Amendments (HSWA) of 1984. Since the State of Indiana has not yet received authorization to administer the most recent hazardous waste program requirements under HSWA, additional permit conditions may be issued by the U.S. EPA to address these new requirements.

The Permittee is authorized to conduct the following hazardous waste management activities:

| | STORAGE | | TREATMENT | | DISPOSAL |
|---|---|---|---|---|---|
| X | Container | X | Tank | | Injection Well |
| X | Tanks | | Surface Impoundments | | Landfill |
| | Waste Pile | | Incinerator | | Land Application |
| | Surface Impoundment | X | Other | | |

Federal regulations 40 CFR Parts 260 through 270 have been incorporated by reference. Where exceptions to incorporated Federal regulations are necessary, these exceptions will be noted in the text of the State rule. 329 IAC 3.1-1-7

The conditions of this permit were developed in accordance with the following applicable provisions of 329 IAC 3.1:

ID & Listing of Hazardous Waste
329 IAC 3.1-6
40 CFR 261 Subparts A, B, C, D, and
Appendices I, II, III, VII, VIII, IX, X

Standards for Owners and Operators of
Treatment, Storage, and Disposal Facilities
329 IAC 3.1-9
40 CFR 264 Subparts A, B, C, D, and E

Closure and Post-Closure
329 IAC 3.1-9
40 CFR 264 Subpart G

Financial Requirements
329 IAC 3.1-15

Use and Management of Containers
329 IAC 3.1-9
40 CFR 264 Subpart I

| Date Modified | Modification Type | Description of Modification |
|---|---|---|
| January 2012 | Class 1 Prior Approval | 50-foot setback variance |
| January 2012 | Class 1 | Contingency Plan |
| April 2012 | Class 2 | 25% container storage capacity increase |
| July 2012 | Class 1 Prior Approval | Cost Estimate |
| August 2012 | Class 1 | Contingency Plan |
| January 2013 | Class 2 | Area 5 Cylinder Room safety improvements |
| January 2013 | Class 1 | Contingency Plan |
| April 2013 | Class 1 | Secondary Containment Coating Materials |
| January 2014 | Class 1 | Generator Waste Stream Profile & Lab Pack & Cylinder Profile Sheets revised |
| January 2014 | Class 1 | Contingency Plan |
| July 2014 | Class 1 | Contingency Plan |
| August 2014 | Class 1 | Personnel Training |

Tank Systems
329 IAC 3.1-9
40 CFR 264 Subpart J

Corrective Action for Solid
Waste Management Units
329 IAC 3.1-9
40 CFR 264 Subpart S

Air Emission Standards for
Process Vents
329 IAC 3.1-9
40 CFR 264 Subpart AA

Air Emission Standards for
Equipment Leaks
329 IAC 3.1-9
40 CFR 264 Subpart BB

Air Emission Standards for Tanks
Surface Impoundments and Containers
329 IAC 3.1-9
40 CFR 264 Subpart CC

Hazardous Waste Permit Programs
329 IAC 3.1-13
40 CFR 270 Subparts A, B, C, and D

Inspection and Investigation
329 IAC 3.1-1-3 and 329 IAC 3.1-1-4

Enforcement
329 IAC 3.1-1-5

## Permit Approval

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any Attachments) and the applicable rules and requirements contained in 329 IAC 3.1 and 40 CFR 260 through 270 as specified in the permit. Applicable rules are those which are in effect on the date of issuance of this permit. (See 329 IAC 3.1-13; 40 CFR 270.32)

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated April 22, 2011, and any subsequent amendments (hereafter referred to as the application) is accurate and that the facility has been or will be constructed and/or operated as specified in the application. Any inaccuracies found in the application may be grounds for the modification, revocation and reissuance, or termination of this permit (329 IAC 3.1-13-7), and potential enforcement action. The Permittee must inform the Indiana Department of Environmental Management (IDEM) of any deviation from, or changes in, the information in the application which would affect the Permittee's ability to comply with the applicable rules or permit conditions.

Pursuant to IC 13-15-5-3 and IC 4-21.5-3-5(f), this permit takes effect fifteen (15) days from receipt of this notice. If you wish to challenge this decision, IC 13-15-6-1 and IC 4-21.5-3-7 require that you file a Petition for Administrative Review. If you seek to have the effectiveness of the permit stayed during administrative review, you must also file a Petition for Stay. The petition(s) must be submitted to the Office of Environmental Adjudication, Government Center North, Room 501, 100 North Senate Avenue, Indianapolis, Indiana 46204, within fifteen (15) days after your receipt of this notice. The petition(s) must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision, or otherwise entitled to review by law. Identifying the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, or date of this notice will expedite review of the petition. Additionally, IC 13-15-6-2 requires that a Petition for Administrative Review must include:

1. The name and address of the person making the request.
2. The interest of the person making the request.
3. Identification of any persons represented by the person making the request.
4. The reasons, with particularity, for the request.

5. The issues, with particularity, proposed for consideration at the hearing.

6. Identification of the terms of the permit which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing licenses of the type granted or denied by the Commissioner.

Pursuant to IC 4-21.5-3-1(f), any document serving as a petition for review or review and stay must be filed with the Office of Environmental Adjudication. Filing of such a document is complete on the earliest of the following dates:

1. the date on which the petition is delivered to the Office of Environmental Adjudication, Government Center North, Room 501, 100 North Senate Avenue, Indianapolis, Indiana 46204;

2. the date of the postmark on the envelope containing the petition, if the petition is mailed by United States mail; or

3. the date on which the petition is deposited with a private carrier, as shown by a receipt issued by the carrier, if the petition is sent by private carrier.

The portions of the permit for which a Petition for Stay has been filed will take effect at the expiration of the additional fifteen (15) day period unless or until an Environmental Law Judge stays the permit in whole or in part. This permit shall remain in effect until five (5) years from the effective date unless revoked and reissued, modified, or terminated (329 IAC 3.1-13-7), or continued in accordance with IC 13-15-6-3.

This permit terminates and supersedes any other State hazardous waste management permit.

Issued this 8th day of December, 2011.

By: _____
Jeffrey L. Sewell, Chief
Permits Branch
Office of Land Quality

**Tradebe Treatment and Recycling**
**East Chicago, Indiana**
**EPA ID# IND000646943**

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# I. STANDARD CONDITIONS

## A. EFFECT OF PERMIT

The Permittee is allowed to store and treat hazardous waste in accordance with the conditions of the RCRA permit. Any storage or treatment of hazardous waste not authorized in this permit or the regulations is prohibited.

Pursuant to 329 IAC 3.1 and 40 CFR 260 through 270 (for HSWA Provisions), compliance with the conditions of this RCRA Permit generally constitutes compliance for purposes of enforcement, with the Indiana Environmental Management Act and RCRA, as amended by HSWA, except for those requirements not included in the Permit which become effective by statute, or which are promulgated under 329 IAC 3.1 and 40 CFR Section 260 through 270, restricting the placement of hazardous wastes in or on the land. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of Federal, State, or local laws or regulations. Compliance with the terms of this permit does not constitute a defense to any Order issued or any action brought under Section 3013 or Section 7003 of RCRA; Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 601), commonly known as CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9606(a)), commonly known as SARA, or any other law providing for protection of public health or the environment. 329 IAC 3.1-13; 40 CFR 270.4; IC 13

## B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in 329 IAC 3.1-13-7. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

## C. SEVERABILITY

The provisions of the permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this

permit shall not be affected thereby. In the event that a condition of this permit is stayed for any reason, all provisions of the permit severable from the stayed provisions shall take effect. With regard to stayed provisions of the permit, the Permittee shall continue to comply with the related applicable standards and relevant permitted standards in 329 IAC 3.1-9 and 329 IAC 3.1-15 from the previously issued permit until final resolution of the stayed condition, unless the Commissioner of the Indiana Department of Environmental Management (Commissioner) determines that compliance with the related applicable and relevant standards would be technologically incompatible with other conditions of this permit which have not been stayed. 329 IAC 3.1-13; 40 CFR 270.32

D. DUTIES AND REQUIREMENTS

1. Duty to Comply. The Permittee shall comply with all conditions of the RCRA permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of IC 13 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. 329 IAC 3.1-13; 40 CFR 270.30(a); 270.61

2. Duty to Reapply. The Permittee shall submit a complete application for a new permit at least 180 days before this permit expires unless:

   a) the Permittee no longer wishes to operate a hazardous waste management facility and all remaining corrective action obligations have been met; or,

   b) permission for submittal on a later date has been granted by the Commissioner.

   The Commissioner shall not grant permission for applications to be submitted later than the expiration date of the existing permit. 329 IAC 3.1-13; 329 IAC 3.1-13-3(h)

3. Permit Expiration. The duration of this permit shall not exceed five (5) years from the effective date of the permit, except as provided by 329 IAC 3.1-13-15. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application for a new permit and through no fault of the Permittee, the Commissioner has not issued a new permit with an effective date under 329 IAC 3.1-13-14 on or before the expiration date of the previous permit. 329 IAC 3.1-13-16

4. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. 329 IAC 3.1-13; 40 CFR 270.30(c)

5. Duty to Mitigate. In the event of non-compliance with this Permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. 329 IAC 3.1-13; 40 CFR 270.30(d)

6. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of the permit. 329 IAC 3.1-13; 40 CFR 270.30(e)

7. Duty to Provide Information. The Permittee shall furnish to the Commissioner, within a reasonable time, any relevant information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit. 329 IAC 3.1-13; 40 CFR 270.30(h); 264.74

8. Inspection and Entry. Pursuant to 329 IAC 3.1-1-3 and 40 CFR 270.30(i), the Permittee shall allow the Commissioner, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

   a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit (329 IAC 3.1-13; 40 CFR 270.30(i)(1));

   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit (329 IAC 3.1-13; 40 CFR 270.30(i)(2));

   c. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit (329 IAC 3.1-13; 40 CFR 270.30(i)(3)); and

   d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by IC 13, any substances or parameters at any location (329 IAC 3.1-13; 40 CFR 270.30(i)(4)).

9. Monitoring and Reporting.

   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from 329 IAC 3.1-6; 40 CFR 261, Appendix I. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, (Third Edition as amended by updates) (as referenced in 40 CFR 260.11); Standard Methods for the Examination of Water and Wastewater, (the 19th Edition, 1995); or an equivalent method as specified in the attached Waste Analysis Plan. 329 IAC 3.1-13; 40 CFR 270.30(j)(1)

   b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of

all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, or record or for a period of time greater than three (3) years as specified elsewhere in this permit. Corrective Action records must be maintained at least 3 years after all Corrective Action activities have been completed. These periods may be extended by request of the Commissioner at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. 329 IAC 3.1-13; 40 CFR 270.30(j)(2) and 40 CFR 264.74(b)

c. Pursuant to 329 IAC 3.1-13; 40 CFR 270.30(j)(3), records of monitoring information shall include:

i. The date(s), exact place, and times of sampling or measurements;

ii. The individual(s) who performed the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The individual(s) and laboratory who performed the analyses;

v. The analytical technique(s) or method(s) used. Analytical technique(s) or method(s) is defined as encompassing both the sampling technique (method) and method of chemical analysis used. This information must be provided in the Waste Analysis Plan; and

vi. The result(s) of such analyses, including QA/QC documentation.

d. Monitoring results shall be reported to the Commissioner at the intervals specified elsewhere in this permit. 329 IAC 3.1-13; 40 CFR 270.30(l)(4)

10. Reporting Planned Changes. The Permittee shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility. 329 IAC 3.1-13; 40 CFR 270.30(l)(1)

11. Certification of Construction or Modification. Pursuant to 329 IAC 3.1-13 and 40 CFR 270.30(l)(2), the Permittee may not treat, store or dispose of hazardous waste in a modified portion of the facility except as provided in 40 CFR 270.42 until:

    a. The Permittee has submitted to the Commissioner by certified mail or hand delivery a letter signed by the Permittee and a qualified professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

    b. i. The Commissioner has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

       ii. Within 15 days of the date of submission of the letter described in I.D.11.a., the Permittee has not received notice from the Commissioner of his or her intent to inspect, prior inspection is waived and the Permittee may commence treatment, storage, or disposal of hazardous waste.

12. Transfer of Permits. This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 329 IAC 3.1-13; 40 CFR 270.40(b) or 40 CFR 270.41(b)(2) to identify the new Permittee and incorporate such other requirements as may be necessary under IC 13. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator, in writing, of the requirements of 329 IAC 3.1 and IC 13, including all applicable corrective action requirements. 329 IAC 3.1-13; 40 CFR 270.40

13. Reporting Anticipated Noncompliance. The Permittee shall give advance notice to the Commissioner of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Such notification does not excuse the Permittee's duty to comply with permit requirements. 329 IAC 3.1-13; 40 CFR 270.30(l)(2)

14. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date. 329 IAC 3.1-13; 40 CFR 270.30(l)(5)

15. Twenty-four Hour Reporting. The Permittee shall report to the Commissioner any noncompliance with the permit which may endanger health or the environment. Any such information shall be reported orally to the IDEM 24 hour emergency telephone number 317/233-7745, within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. Pursuant to 329 IAC 3.1-13; 40 CFR 270.30(l)(6), this report shall include the following:

a. Information concerning the release of any hazardous waste which may endanger public drinking water supplies.

b. Information concerning the release or discharge of any hazardous waste, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility. The description of the occurrence and its cause shall include:

i. Name, address, and telephone number of the owner or operator;

ii. Name, address, and telephone number of the facility;

iii. Date, time, and type of incident;

iv. Name and quantity of material(s) involved;

v. The extent of injuries, if any;

vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and

vii. Estimated quantity and disposition of recovered material that resulted from the incident.

A written submission shall also be provided within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee need not comply

with the five (5)-day written notice requirement if the Commissioner waives the requirement and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.

16. Other Noncompliance. The Permittee shall report all instances of noncompliance not otherwise required to be reported under Condition I.D.15, at the time monitoring reports, as required by this permit, are submitted. The reports shall contain the information listed in Condition I.D.15. 329 IAC 3.1-13; 40 CFR 270.30(l)(10)

17. Other Information. When the Permittee becomes aware that the facility failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Commissioner, the Permittee shall promptly submit such facts or information. 329 IAC 3.1-13; 40 CFR 270.30(l)(11)

18. Submittal of Reports or Other Information. All reports or other information required to be submitted by the terms of this permit shall be sent to:

Commissioner
Indiana Department of Environmental Management
Hazardous Waste Permit Section
MC 66-20, IGCN 1101
100 North Senate Avenue
Indianapolis, IN 46204

E. SIGNATORY REQUIREMENT All reports or other information requested by the Commissioner shall be signed and certified as required by 329 IAC 3.1-13; 40 CFR 270.11.

F. CONFIDENTIAL INFORMATION The Permittee may claim confidential any information required to be submitted by this permit in accordance with 329 IAC 3.1-13-4, 329 IAC 6.1, and IC 13-14-11-1.

G. WASTE MINIMIZATION

The Permittee shall certify at least annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that the Permittee generates to the degree determined by the Permittee to be economically practicable; and the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the

present and future threat to human health and the environment, in accordance with 40 CFR 264.73(b)(9) and Section 3005(h) of RCRA, 42 U.S.C. §6925(h). The certifications shall be recorded, as they become available, and maintained in the operating record until closure of the facility.

H. DOCUMENTS TO BE MAINTAINED AT FACILITY SITE Except as noted in the regulations, the Permittee shall maintain at the facility, until closure is completed and certified by the owner/operator and a qualified professional engineer, the following documents and amendments, revisions and modifications to these documents:

1. Waste Analysis Plan as required by 329 IAC 3.1-9, 40 CFR 264.13 and this permit and any document(s) referenced therein to describe on-site procedures.

2. Personnel training documents and records as required by 329 IAC 3.1-9, 40 CFR 264.16(d) and (e) and this permit.

3. Contingency Plan as required by 329 IAC 3.1-9, 40 CFR 264.53(a), and this permit.

4. Closure Plan as required by 329 IAC 3.1-9, 40 CFR 264.112(a)(2), and this permit.

5. Cost estimate for facility closure as required by 329 IAC 3.1-15-3, and this permit.

6. Operating record as required by 329 IAC 3.1-9, 40 CFR 264.73, and this permit.

7. Inspection schedules as required by 329 IAC 3.1-9, 40 CFR 264.15(b)(2), and this permit.

8. Record of facility inspections, as required by 329 IAC 3.1-9, 40 CFR 264.15(d), and this permit, shall be maintained for at least three years.

9. Copies of all manifests for shipments of hazardous waste received at and originating from this facility, as required by 329 IAC 3.1-7, 329 IAC 3.1-9-2(6) 40 CFR 262.40, 40 CFR 264.71, and this permit, shall be maintained for at least three years.

10. Notifications from generators subject to 40 CFR Part 268, Subtitle C, that specify treatment standards, as required by 40 CFR 264.73, 268.7, and this permit.

11. Waste minimization certifications must be part of the operating record as required by 40 CFR 264.73(b)(9).

12. Corrective Action reports and records as required by Permit Conditions VI of this permit. These reports and records must be maintained for at least 3 years after all Corrective Action Activities have been completed; and

13. Records regarding closed-vent systems and control devices and/or equipment leaks as required by Condition V of this permit.

## II. GENERAL FACILITY CONDITIONS

A. DESIGN AND OPERATION OF FACILITY The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

B. Required Notice

(1) The Permittee shall notify the Commissioner in writing at least four (4) weeks in advance of the date the Permittee expects to receive hazardous waste from a foreign source. Notice of subsequent shipments of the same waste having the same EPA hazardous waste number from the same foreign source is not required. 329 IAC 3.1-9, 40 CFR 264.12(a)

(2) When the Permittee is to receive hazardous waste from an off-site source (except where the Permittee is also the generator), it must inform the generator in writing that it has the appropriate permits for, and will accept, the waste the generator is shipping. The Permittee must keep a copy of this written notice as part of the operating record. (See Permit Condition II.K.1). 329 IAC 3.1-9, 40 CFR 264.12(b)

C. GENERAL WASTE ANALYSIS The Permittee shall comply with the procedures described in the attached Waste Analysis Plan, Attachment C, which is incorporated herein by reference.

D. SECURITY The Permittee shall comply with the security provisions of 329 IAC 3.1-9 and 40 CFR 264.14(b) and (c) as described in the Procedures to Prevent Hazards, Attachment F, which is incorporated herein by reference.

E. GENERAL INSPECTION REQUIREMENTS The Permittee shall follow the inspection schedule in the Procedures to Prevent Hazards, Attachment F. The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by 329 IAC 3.1-9 and 40 CFR 264.15(c). Records of inspections shall be kept as required by 329 IAC 3.1-9 and 40 CFR 264.15(d).

F. PERSONNEL TRAINING The Permittee shall conduct personnel training as required by 329 IAC 3.1-9 and 40 CFR 264.16. This training program shall follow the attached outline in the Personnel Training Plan, Attachment H, which is incorporated herein by reference. The Permittee shall maintain training documents and records as required by 329 IAC 3.1-9 and 40 CFR 264.16(d) and (e).

G. GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE The Permittee shall comply with the requirements of 329 IAC 3.1-9 and 40 CFR 264.17.

H. PREPAREDNESS AND PREVENTION

1. Required Equipment. The Permittee shall equip the facility with the equipment set forth in the attached Contingency Plan, Attachment G, which is incorporated herein by reference, and as required by 329 IAC 3.1-9 and 40 CFR 264.32.

2. Testing and Maintenance of Equipment. The Permittee shall test and maintain the equipment specified in Attachment G (see the previous permit condition) as necessary to assure its proper operation in time of emergency. Such testing and maintenance activities are set forth in the inspection schedule in Attachment F.

3. Access to Communications or Alarm System. The Permittee shall maintain access to the communications or alarm systems as required by 329 IAC 3.1-9 and 40 CFR 264.34.

4. Required Aisle Space. The Permittee shall maintain aisle space as required by 329 IAC 3.1-9 and 40 CFR 264.35.

5. Arrangements with Local Authorities. The Permittee shall attempt to make arrangements with State and local authorities as required by 329 IAC 3.1-9 and 40 CFR 264.37. If State or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

I. CONTINGENCY PLAN

1. Implementation of Plan. The Permittee shall immediately comply with the provisions of the Contingency Plan, Attachment G, and follow the emergency procedures described by 329 IAC 3.1-9-2(4) and (5) and 40 CFR 264.56 whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment.

2. Copies of Plan. The Permittee shall comply with the requirements of 329 IAC 3.1-9 and 40 CFR 264.53.

3. Amendments to Plan. The Permittee shall review and immediately amend, if necessary, the Contingency Plan, as required by 329 IAC 3.1-9 and 40 CFR 264.54.

4. Emergency-Coordinator. The Permittee shall comply with the requirements of 329 IAC 3.1-9 and 40 CFR 264.55, concerning the Emergency Coordinator.

J. MANIFEST SYSTEM The Permittee shall comply with the manifest requirements of 329 IAC 3.1-9, 40 CFR 264.71, 264.72, and 264.76.

K. RECORD KEEPING AND REPORTING In addition to the record keeping and reporting requirements specified elsewhere in this Permit, the Permittee shall comply with the following record keeping and reporting requirements:

1. Operating Record. The Permittee shall maintain a written operating record at the facility in accordance with 329 IAC 3.1-9 and 40 CFR 264.73.

2. Sampling and Analysis Records. The Permittee shall keep original or exact copies of all sampling and analysis records. These records shall be available for inspection, in accordance with 329 IAC 3.1-9 and 40 CFR 264.74.

3. Biennial Report. The Permittee shall comply with the biennial report requirements of 329 IAC 3.1-9 and 40 CFR 264.75.

L. CLOSURE

1. Performance Standard. The Permittee shall close the facility as required by 329 IAC 3.1-9 and 40 CFR 264.111 and in accordance with the Closure Plan, Attachment I, which is incorporated herein by reference.

2. Amendment to Closure Plan. The Permittee shall amend the Closure Plan in accordance with 329 IAC 3.1-9 and 40 CFR 264.112(c) whenever necessary, and whenever requested by the Commissioner in accordance with 40 CFR 264.112(c)(4).

3. Notification of Closure. Pursuant to 329 IAC 3.1-9 and 40 CFR 264.112(d) the Permittee shall notify the Commissioner in writing at least sixty (60) days prior to the date he expects to begin closure of a surface